Anatomy: Head



Question 1 of 115

The lateral pterygoid primarily acts to produce which of the following movements:

a Protrusion of the mandible

b Retraction of the mandible

c Elevation of the mandible

d Depression of the mandible

e Elevation and protrusion of the mandible

Next > | See Answer

Something wrong?

Question Navigator

1 Current Question
2 ...
3 ...
4 ...
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 1 of 115

The lateral pterygoid primarily acts to produce which of the following movements:

a) Protrusion of the mandible ✔
b) Retraction of the mandible
c) **Elevation of the mandible** ✖
d) Depression of the mandible
e) Elevation and protrusion of the mandible

Answer

The lateral pterygoid is the main muscle responsible for protrusion of the lower jaw.

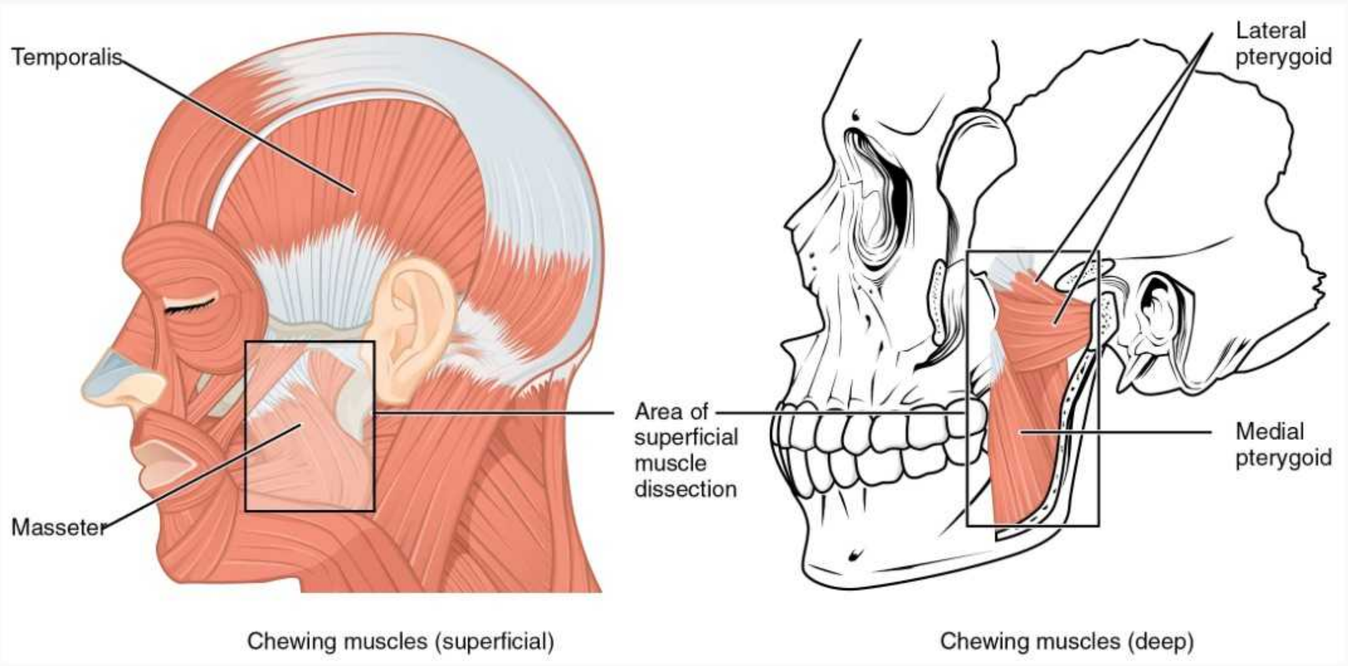
Notes

The lateral pterygoid is the main muscle responsible for protrusion of the lower jaw and also assists in depression of the mandible.

The medial pterygoid mainly elevates the mandible but also assists the lateral pterygoid in protruding the lower jaw.

When the lateral and medial pterygoid muscles contract on only one side, the chin moves to the opposite side. When opposite movements at the two TMJs are coordinated, a chewing movement results.

Both the medial and lateral pterygoids are innervated by the mandibular division of the trigeminal nerve.



By OpenStax [CC BY 4.0], via Wikimedia Commons

Next >

Something wrong?

Question Navigator

1 Current Question
2 ...
3 ...
4 ...
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 2 of 115

The nasolacrimal duct opening is located:

a In the sphenoid-ethmoidal recess

b In the inferior nasal meatus

c in the middle nasal meatus

d In the superior nasal meatus

e In the medial wall of the nasal cavity

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Current Question
3 ...
4 ...
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 2 of 115

The nasolacrimal duct opening is located:

a) In the sphenoid-ethmoidal recess
b) **In the inferior nasal meatus** ✔
c) In the middle nasal meatus
d) In the superior nasal meatus
e) In the medial wall of the nasal cavity

Answer

The lateral wall of the nasal cavity contains the nasolacrimal duct opening into the inferior nasal meatus, draining tears from the eye into the nasal cavity.

Notes

The nasal cavities are separated from each other by a midline nasal septum, from the oral cavity below by the hard palate and from the cranial cavity above by parts of the frontal, palatine, ethmoid and sphenoid bones. The nasal cavity is lined by ciliated epithelial cells which help trap and remove particulate matter from the airway.

Anatomical boundaries

Each nasal cavity has a floor, a roof, a medial and a lateral wall.

Space	Nasal cavity
Floor	Hard palate (palatine process of maxilla and horizontal plate of palatine bone)
Roof	Frontal bone, nasal bone, cribriform plate of ethmoid bone, sphenoid bone
Medial wall	Thin nasal septum (formed primarily from perpendicular plate of ethmoid bone, vomer and septal cartilage)
Lateral wall	Ethmoid bone, nasal bone, palatine bone, sphenoid bone, lacrimal bone, maxilla, conchae

The floor of each nasal cavity consists of soft tissues of the external nose and the upper surface of the palatine process of the maxilla and the horizontal plate of the palatine bone (which together form the hard palate).

The roof of the nasal cavity is formed:

- anteriorly by the nasal spine of the frontal bone and the nasal bones, and the lateral processes of the septal cartilage and cartilages of the external nose
- centrally by the cribriform plate of the ethmoid bone
- posteriorly by the sphenoid bone and palatine bone.

The medial wall of the nasal cavity is the mucosa-covered surface of the thin nasal septum.

Bony support for the lateral wall of the nasal cavity is provided by the ethmoid bone, palatine bone, sphenoid bone, lacrimal bones and maxillae.

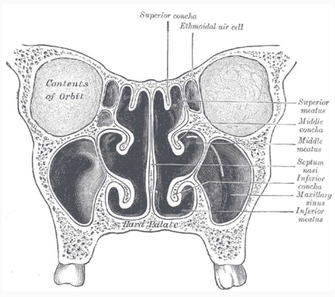
The lateral wall is characterised by three curved shelves of bone – the conchae – which run one above the other and project medially and inferiorly across the nasal cavity. These conchae increase the surface area of contact between tissues of the lateral wall and respired air.

The conchae divide each nasal cavity into four air channels:

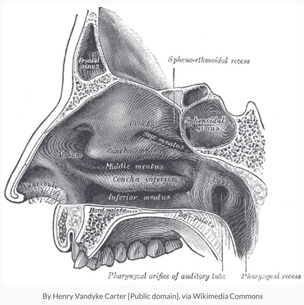
- an inferior nasal meatus (between the inferior concha and the nasal floor)
- a middle nasal meatus
- a superior nasal meatus
- a sphenoid-ethmoidal recess (between the superior concha and the nasal roof).

The openings of the paranasal sinuses are on the lateral wall and roof of the nasal cavities.

In addition the lateral wall also contains the nasolacrimal duct opening onto the inferior nasal meatus, draining tears from the eye into the nasal cavity.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Nerve supply

The nasal cavities are innervated by:

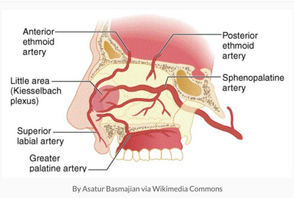
- The olfactory nerve – carrying olfaction
- The trigeminal nerve – carrying general sensation, anteriorly by the ophthalmic nerve and posteriorly by the maxillary nerve
- The facial nerve – carrying parasympathetic fibres to the nasal glands (which join branches of the maxillary nerve in the pterygopalatine fossa).

Blood supply

The nasal cavities have a rich vascular supply to allow them to alter the humidity and temperature of respired air.

Blood supply to the nasal cavity is by terminal branches of the maxillary and facial arteries (from the external carotid artery) and ethmoidal branches of the ophthalmic artery (from the internal carotid artery).

The vessels form extensive anastomoses with each other, particularly in the anterior region of the medial wall where there are anastomoses between branches of the greater palatine (maxillary artery), sphenopalatine (maxillary artery), superior labial (facial artery) and anterior ethmoidal arteries (ophthalmic artery) – this area is known as Little's area and is the major site of epistaxis.



By Asatur Basmajian via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Current Question
3 ...
4 ...
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 3 of 115

The zygomatic arch is formed from which of the following bones:

a Zygomatic bone

b Zygomatic and facial bone

c Zygomatic and temporal bone

d Zygomatic and sphenoid bone

e Zygomatic and maxilla bone

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Current Question
4 ...
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 3 of 115

The zygomatic arch is formed from which of the following bones:

a) Zygomatic bone
b) Zygomatic and facial bone
c) Zygomatic and temporal bone ✔
d) Zygomatic and sphenoid bone
e) **Zygomatic and maxilla bone** ✖

Answer

The zygomatic arch is formed by the zygomatic process of the temporal bone and the temporal process of the zygomatic bone.

Notes

The zygomatic arch is formed by the zygomatic process of the temporal bone and the temporal process of the zygomatic bone.

The temporal fossa is the narrow fan-shaped space that covers the lateral surface of the skull, superior to the infratemporal fossa and above the zygomatic arch.

Space	Temporal fossa
Superior margin	Superior and inferior temporal lines
Inferior margin	Zygomatic arch laterally and greater wing of sphenoid bone medially
Anterior margin	Frontal process of zygomatic bone and zygomatic process of frontal bone
Contents	Temporalis muscle, deep temporal nerves, zygomaticotemporal nerve, deep temporal arteries, middle temporal artery

- Its upper margin is defined by a pair of temporal lines that arch across the skull from the zygomatic process of the frontal bone to the supramastoid crest of the temporal bone.
- Laterally it is limited by the temporal fascia, which is a tough aponeurosis overlying the temporalis muscle and attached by its outer margin to the superior temporal line and by its inferior margin to the zygomatic arch.
- Anteriorly it is limited by the posterior surface of the frontal process of the zygomatic bone and the posterior surface of the zygomatic process of the frontal bone, which separate the temporal fossa from the orbit in front.
- Its inferior margin is marked by the zygomatic arch laterally and by the infratemporal crest of the greater wing of the sphenoid medially.

It communicates with the infratemporal fossa below through the gap between the zygomatic arch and the more medial surface of the skull.

Contents of the temporal fossa:

- Temporalis muscle
- Deep temporal nerves (branches of mandibular nerve) – innervate temporalis muscle
- Zygomaticotemporal nerve (branch of maxillary nerve) – supplies skin of temple
- Deep temporal arteries (branch of maxillary artery)
- Middle temporal artery (branch of superficial temporal artery)

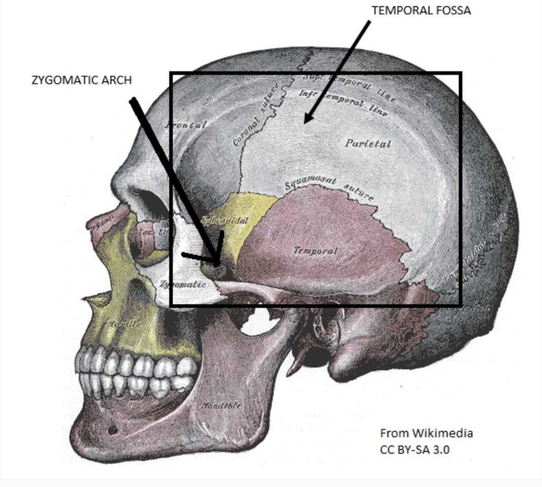


Image modified by FRCEM Success. Original image by Engusz at Hungarian Wikipedia [GFDL or CC-BY-SA-3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Current Question
4 ...
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 4 of 115

The masseter muscle is innervated by which of the following nerves:

a Facial nerve

b Mandibular division of the trigeminal nerve

c Glossopharyngeal nerve

d Maxillary division of the trigeminal nerve

e Spinal accessory nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Current Question
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 4 of 115

The masseter muscle is innervated by which of the following nerves:

a) **Facial nerve** ✗
b) Mandibular division of the trigeminal nerve ✓
c) Glossopharyngeal nerve
d) Maxillary division of the trigeminal nerve
e) Spinal accessory nerve

Answer

The masseter muscle is innervated by the mandibular division of the trigeminal nerve.

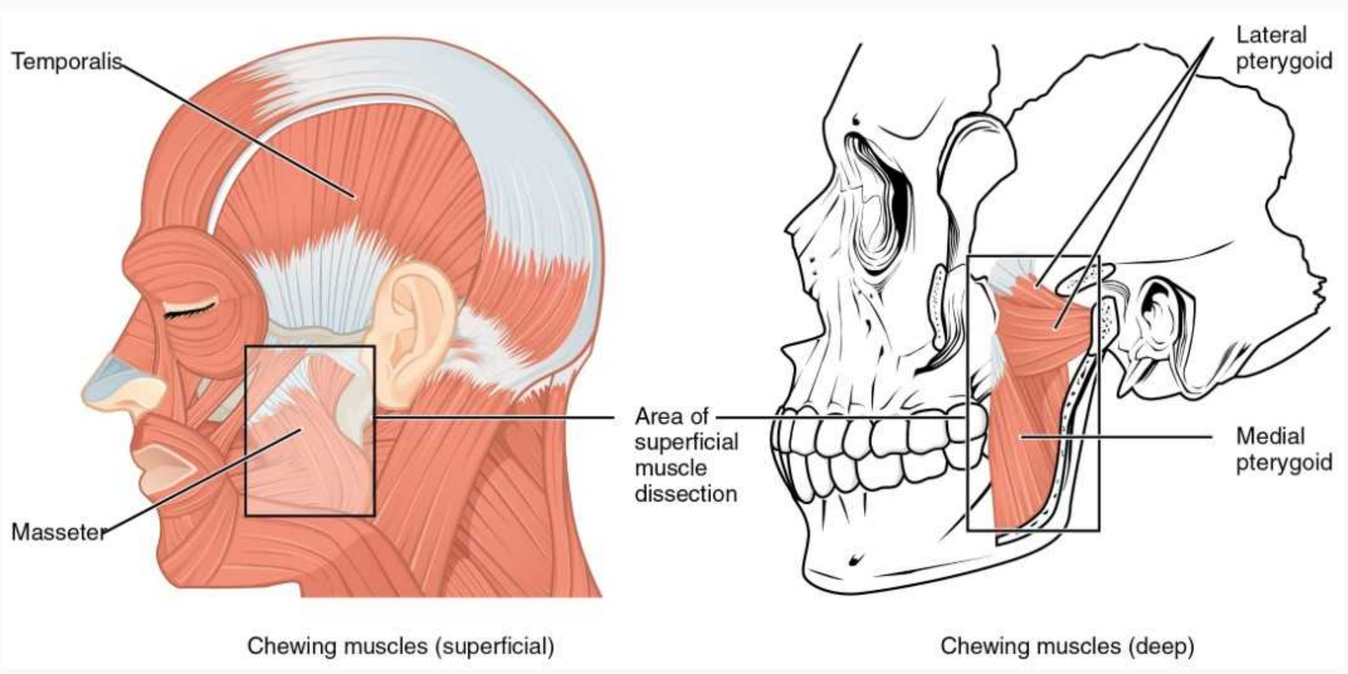
Notes

Muscle	Masseter
Origin	Zygomatic arch and maxillary process of zygomatic bone
Insertion	Lateral surface of ramus of mandible
Action	Elevation of mandible
Innervation	Mandibular division of trigeminal nerve

The masseter muscle is a powerful muscle of mastication that elevates the mandible.

It overlies the lateral surface of the ramus of the mandible. It originates from the zygomatic arch and the maxillary process of the zygomatic bone and inserts onto the lateral surface of the ramus of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Current Question
5 ...
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 5 of 115

The medial rectus muscle acts to produce which of the following eyeball movements:

a Elevation

b Depression

c Abduction

d Adduction

e Medial rotation

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Current Question
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 5 of 115

The medial rectus muscle acts to produce which of the following eyeball movements:

a) Elevation
b) Depression
c) Abduction
d) **Adduction** ✔
e) Medial rotation

Answer

The medial rectus muscle acts to adduct the eyeball.

Notes

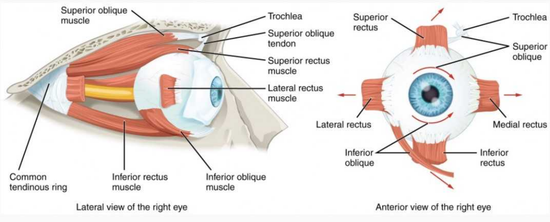
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Current Question
6 ...
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 6 of 115

The parotid duct opens in the oral cavity near:

a The second lower molar tooth

b The second upper molar tooth

c The third lower molar tooth

d The third upper molar tooth

e The first upper molar tooth

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Current Question
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 6 of 115

The parotid duct opens in the oral cavity near:

a) The second lower molar tooth
b) The second upper molar tooth ✔
c) The third lower molar tooth
d) **The third upper molar tooth** ✖
e) The first upper molar tooth

Answer

The parotid duct opens into the oral cavity near the second upper molar tooth.

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

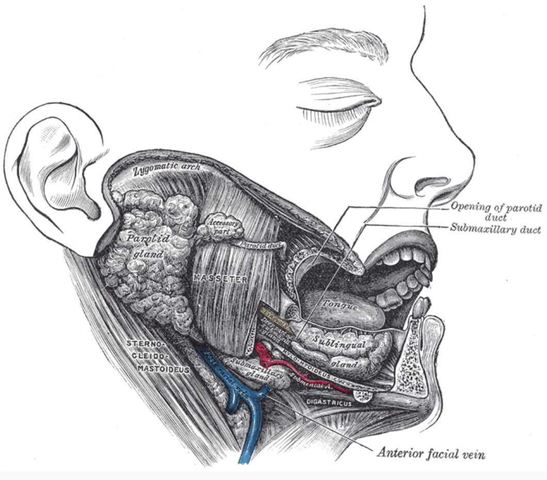
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Current Question
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 7 of 115

Regarding the facial vein, which of the following statements is INCORRECT:

a The facial vein originates near the medial corner of the eye.

b The facial vein originates from the union of the supratrochlear and supraorbital veins.

c The facial vein is the major vein draining the face.

d The facial vein drains into the external jugular vein.

e The facial vein communicates with the pterygoid plexus.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Current Question
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 7 of 115

Regarding the facial vein, which of the following statements is INCORRECT:

a) **The facial vein originates near the medial corner of the eye.** ✘

b) The facial vein originates from the union of the supratrochlear and supraorbital veins.

c) The facial vein is the major vein draining the face.

d) The facial vein drains into the external jugular vein. ✔

e) The facial vein communicates with the pterygoid plexus.

Answer

The facial vein drains into the internal jugular vein.

Notes

The facial vein is the major vein draining the face. It originates near the medial corner of the eye from the union of the supratrochlear and supraorbital veins, receives tributaries draining the eyelids, the external nose, the lips, cheeks and chin throughout its course, and drains into the internal jugular vein.

As it crosses the face, the facial vein has numerous connections:

- near the medial corner of the orbit, it communicates with ophthalmic veins
- in the area of the cheek, it communicates with veins passing into the infraorbital foramen
- it also communicates with veins passing into deeper regions of the face i.e. the deep facial vein connecting with the pterygoid plexus of veins

All these venous channels have interconnections with the intracranial cavernous sinus through emissary veins that connect intracranial with extracranial veins. There are no valves in the facial vein, or any other venous channels in the head, so blood can move in any direction. This means infections of the face, primarily above the mouth, should be treated with caution to prevent the dissemination of infectious material in an intracranial direction.

Although cavernous sinus thrombosis (CST) is rare, it most commonly has an infectious aetiology (most commonly from spread of infection from the sinuses or middle third of the face, or less commonly secondary to dental abscess or orbital cellulitis).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Current Question
8 ...
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 8 of 115

A 45 year old man presents to ED with an ongoing nose bleed. On examination you suspect the site of bleeding to be in Little's area. Which of the following blood vessels are likely to be involved:

a Descending palatine and ascending pharyngeal arteries

b Sphenopalatine and superior labial arteries

c Posterior and anterior ethmoidal arteries

d Ascending palatine and ascending pharyngeal arteries

e Posterior superior alveolar and anterior ethmoidal arteries

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Current Question
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 8 of 115

A 45 year old man presents to ED with an ongoing nose bleed. On examination you suspect the site of bleeding to be in Little's area. Which of the following blood vessels are likely to be involved:

a) Descending palatine and ascending pharyngeal arteries
b) Sphenopalatine and superior labial arteries ✔
c) **Posterior and anterior ethmoidal arteries** ✖
d) Ascending palatine and ascending pharyngeal arteries
e) Posterior superior alveolar and anterior ethmoidal arteries

Answer

Kiesselbach's plexus (Little's area) is formed by anastomosis between branches of four arteries on the anterior nasal septum:

- The greater palatine artery (maxillary artery)
- The sphenopalatine artery (maxillary artery)
- The superior labial artery(facial artery)
- The anterior ethmoidal artery (ophthalmic artery)

The two largest contributors are the sphenopalatine and the superior labial arteries.

Notes

The nasal cavities are separated from each other by a midline nasal septum, from the oral cavity below by the hard palate and from the cranial cavity above by parts of the frontal, palatine, ethmoid and sphenoid bones. The nasal cavity is lined by ciliated epithelial cells which help trap and remove particulate matter from the airway.

Anatomical boundaries

Each nasal cavity has a floor, a roof, a medial and a lateral wall.

Space	Nasal cavity
Floor	Hard palate (palatine process of maxilla and horizontal plate of palatine bone)
Roof	Frontal bone, nasal bone, cribriform plate of ethmoid bone, sphenoid bone
Medial wall	Thin nasal septum (formed primarily from perpendicular plate of ethmoid bone, vomer and septal cartilage)
Lateral wall	Ethmoid bone, nasal bone, palatine bone, sphenoid bone, lacrimal bone, maxilla, conchae

The floor of each nasal cavity consists of soft tissues of the external nose and the upper surface of the palatine process of the maxilla and the horizontal plate of the palatine bone (which together form the hard palate).

The roof of the nasal cavity is formed:

- anteriorly by the nasal spine of the frontal bone and the nasal bones, and the lateral processes of the septal cartilage and cartilages of the external nose
- centrally by the cribriform plate of the ethmoid bone
- posteriorly by the sphenoid bone and palatine bone.

The medial wall of the nasal cavity is the mucosa-covered surface of the thin nasal septum.

Bony support for the lateral wall of the nasal cavity is provided by the ethmoid bone, palatine bone, sphenoid bone, lacrimal bones and maxillae.

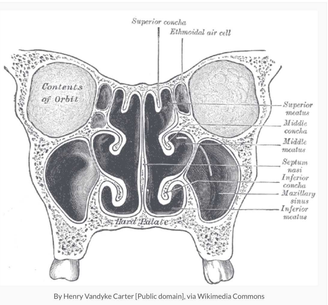
The lateral wall is characterised by three curved shelves of bone – the conchae – which run one above the other and project medially and inferiorly across the nasal cavity. These conchae increase the surface area of contact between tissues of the lateral wall and respired air.

The conchae divide each nasal cavity into four air channels:

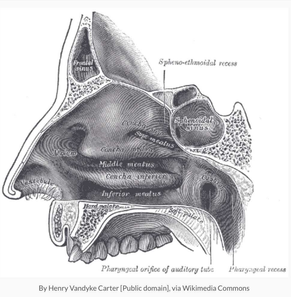
- an inferior nasal meatus (between the inferior concha and the nasal floor)
- a middle nasal meatus
- a superior nasal meatus
- a sphenoid-ethmoidal recess (between the superior concha and the nasal roof).

The openings of the paranasal sinuses are on the lateral wall and roof of the nasal cavities.

In addition the lateral wall also contains the nasolacrimal duct opening onto the inferior nasal meatus, draining tears from the eye into the nasal cavity.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Nerve supply

The nasal cavities are innervated by:

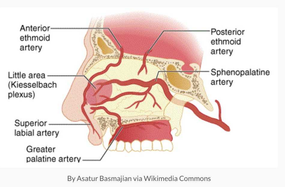
- The olfactory nerve – carrying olfaction
- The trigeminal nerve – carrying general sensation, anteriorly by the ophthalmic nerve and posteriorly by the maxillary nerve
- The facial nerve – carrying parasympathetic fibres to the nasal glands (which join branches of the maxillary nerve in the pterygopalatine fossa).

Blood supply

The nasal cavities have a rich vascular supply to allow them to alter the humidity and temperature of respired air.

Blood supply to the nasal cavity is by terminal branches of the maxillary and facial arteries (from the external carotid artery) and ethmoidal branches of the ophthalmic artery (from the internal carotid artery).

The vessels form extensive anastomoses with each other, particularly in the anterior region of the medial wall where there are anastomoses between branches of the greater palatine (maxillary artery), sphenopalatine (maxillary artery), superior labial (facial artery) and anterior ethmoidal arteries (ophthalmic artery) – this area is known as Little's area and is the major site of epistaxis.



By Asatur Basmajian via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Current Question
9 ...
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 9 of 115



The maxillary artery arises from which of the following blood vessels:

a Superficial temporal artery

b External carotid artery

c Internal carotid artery

d Facial artery

e Occipital artery

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Current Question
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 9 of 115

The maxillary artery arises from which of the following blood vessels:

a) Superficial temporal artery
b) **External carotid artery** ✔
c) Internal carotid artery
d) Facial artery
e) Occipital artery

Answer

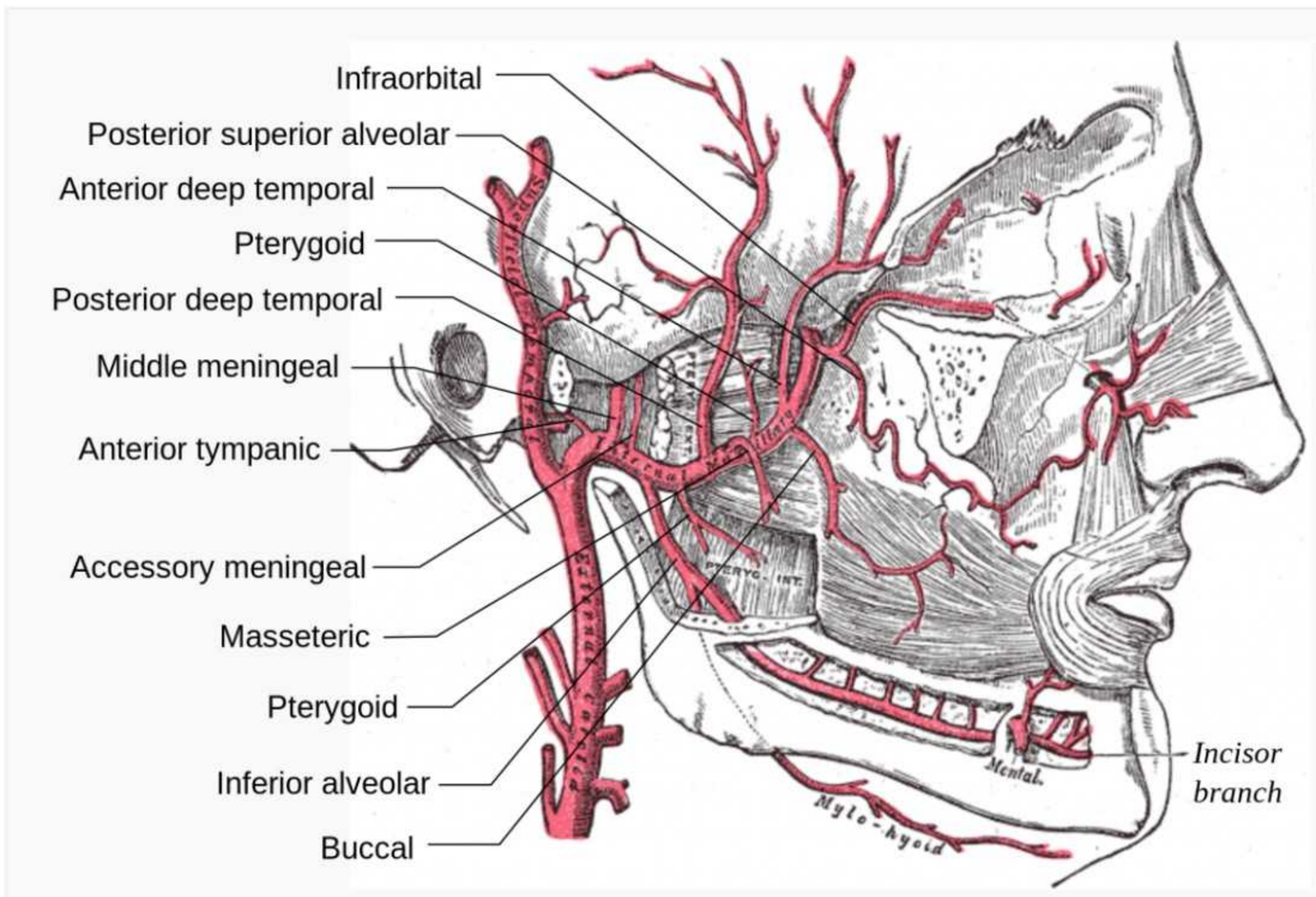
The maxillary artery is the larger terminal branch of the external carotid artery (the smaller being the superficial temporal artery).

Notes

The maxillary artery is the largest branch of the external carotid artery and a major source of blood supply for the nasal cavity, the lateral wall and roof of the oral cavity, all teeth and the dura mater in the cranial cavity.

It passes through and supplies the infratemporal fossa and then enters the pterygopalatine fossa, where it gives origin to terminal branches.

The middle meningeal artery arises from the maxillary artery and ascends vertically to enter the cranial cavity. Within the cranial cavity, the middle meningeal artery and its branches travel in the outer layer of the dura mater, where they can be damaged by lateral blows to the head. When the vessels are torn, the leaking blood, which is under arterial pressure, slowly separates the dura from its attachment to bone, resulting in an extradural haematoma.



By User:Mikael Häggström [Public domain, Public domain or Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Current Question
10 ...
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 10 of 115

The skin over the upper lip is primarily supplied by which of the following nerves:

a Buccal nerve

b Auriculotemporal nerve

c Infraorbital nerve

d Mental nerve

e Zygomaticofacial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Current Question
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 10 of 115

The skin over the upper lip is primarily supplied by which of the following nerves:

a) **Buccal nerve** ✖
b) Auriculotemporal nerve
c) Infraorbital nerve ✔
d) Mental nerve
e) Zygomaticofacial nerve

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

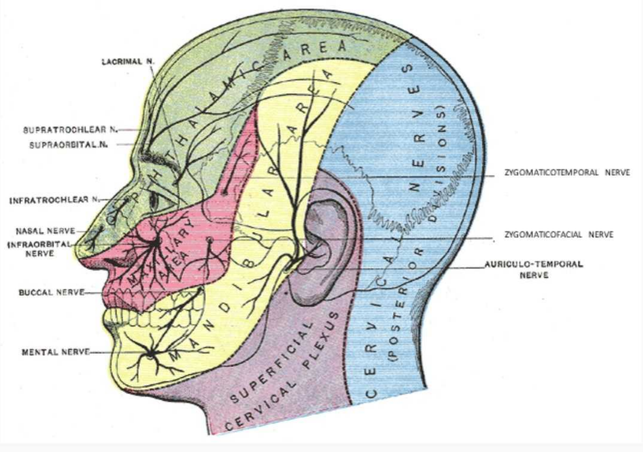
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Current Question
11 ...
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 11 of 115

Regarding the eyeball, which of the following statements is INCORRECT:

a The anterior and posterior chamber are continuous with each other through the pupillary opening.

b The posterior 4/5s of the eyeball is filled with the vitreous body.

c Aqueous humour is absorbed into the canal of Schlemm.

d The posterior chamber is posterior to the lens.

e The aqueous humour supplies nutrient to the avascular cornea and lens.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Current Question
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 11 of 115

Regarding the eyeball, which of the following statements is INCORRECT:

a) ✖
The anterior and posterior chamber are continuous with each other through the pupillary opening.

b) The posterior 4/5s of the eyeball is filled with the vitreous body.

c) Aqueous humour is absorbed into the canal of Schlemm.

d) The posterior chamber is posterior to the lens. ✔

e) The aqueous humour supplies nutrient to the avascular cornea and lens.

Answer

The posterior chamber is posterior to the iris, but anterior to the lens.

Notes

The walls of the eyeball consist of three layers:

- the outer fibrous layer of the sclera posteriorly and the cornea anteriorly
- the middle vascular layer of the choroid posteriorly which is continuous with the ciliary body and iris anteriorly
- the inner retina.

The anterior and posterior chambers are the areas posterior to the cornea, and anterior to the lens. The posterior four-fifths of the eyeball, from the lens to the retina, is the vitreous chamber filled with the vitreous body, a transparent gelatinous substance.

Sclera and cornea

The sclera is an opaque white layer of dense connective tissue that provides attachment for the muscles involved in eyeball movement.

The transparent cornea is the anterior protrusion of the eyeball, continuous with the sclera anteriorly and allows light the enter to eyeball.

This outer layer receives its sensory supply from branches of the trigeminal nerve, which acts as the afferent pathway of the corneal blink reflex (the facial nerve is the efferent pathway of the corneal blink reflex, mediated by the orbicularis oculi muscle).

Choroid, lens and ciliary body

The choroid is posterior and represents two-thirds of the vascular layer; it is a thin, highly vascular, pigmented layer firmly attached to the retina internally and loosely attached to the sclera externally.

The ciliary body extends from the anterior border of the choroid and is composed of the ciliary muscle and the ciliary processes, from which extends the lens attached to the suspensory ligament of the lens.

The lens is a transparent, biconvex elastic disc attached to muscles associated with the outer wall of the eyeball, which can change its refractive ability to maintain visual acuity.

Contraction of the ciliary muscle changes the shape of the lens to accommodate the lens for near vision. The ciliary muscle is innervated by parasympathetic fibres of the oculomotor nerve.

Iris and pupil

The iris, the coloured part of the eye with the central opening forming the pupil, projects outwards from the ciliary body. Smooth muscle fibres within the iris control the size of the pupil.

The sphincter pupillae muscle is innervated by parasympathetic fibres of the oculomotor nerve which acts as the efferent pathway of the pupillary light reflex (the optic nerve is the afferent pathway of the pupillary light reflex). Loss of parasympathetic innervation results in a fixed dilated pupil.

The dilator pupillae muscle is innervated by postganglionic sympathetic fibres arising from the superior cervical ganglion. Loss of sympathetic innervation results in a constricted pupil (miosis). Horner's syndrome results from damage to the sympathetic chain and is characterised by the triad of miosis, partial ptosis (due to loss of innervation to the superior tarsal muscle) and anhydrosis.

Chambers

The anterior chamber is the area of the eyeball directly anterior to the iris. Posterior to the iris and anterior to the lens is the smaller posterior chamber. The chambers are continuous with each other through the pupillary opening. They are filled with aqueous humour, which is secreted into the posterior chamber, flows into the anterior chamber and is absorbed into the canal of Schlemm. The aqueous humour supplies nutrients to the avascular cornea and lens and maintains intraocular pressure. If the normal cycle of production and absorption is disturbed, this can cause glaucoma due to raised intraocular pressure.

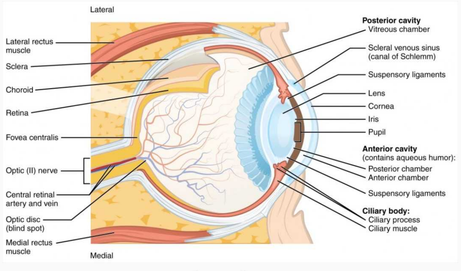
Retina and optic disc

The inner layer of the eyeball is the retina, divided into the posterior optic part and the non-visual part, which covers the internal surface of the ciliary body and the iris.

The optic part of the retina consists of an outer pigmented layer firmly attached to the choroid and the neural layer attached to the pigmented layer around the optic nerve.

The optic disc is where the optic nerve leaves the retina. Lateral to the optic disc, a small area is the macula lutea with its central depression, the fovea centralis. This is the thinnest area of the retina and visual sensitivity is higher here than elsewhere in the retina because it has fewer rods and more cones.

The retina is supplied by the central retinal artery from the ophthalmic artery.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Current Question
12 ...

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 12 of 115

The skin in the area of the medial angle and the side of the nose is primarily supplied by which of the following nerves:

a Lacrimal nerve

b Buccal nerve

c Infratrochlear nerve

d External nasal nerve

e Infraorbital nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Current Question

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 12 of 115

The skin in the area of the medial angle and the side of the nose is primarily supplied by which of the following nerves:

a) Lacrimal nerve
b) Buccal nerve
c) Infratrochlear nerve ✔
d) External nasal nerve
e) **Infraorbital nerve** ✖

Answer

The infratrochlear nerve, branch of the ophthalmic nerve innervates the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

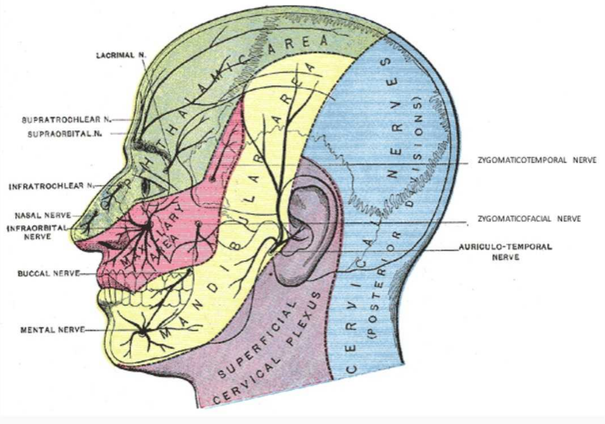
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Current Question

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 13 of 115

Taste from the anterior two-thirds of the tongue is carried by which of the following nerves:

a Mandibular nerve

b Chorda tympani

c Glossopharyngeal nerve

d Hypoglossal nerve

e Lingual nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 13 of 115

Taste from the anterior two-thirds of the tongue is carried by which of the following nerves:

a) Mandibular nerve
b) Chorda tympani ✔
c) Glossopharyngeal nerve
d) Hypoglossal nerve
e) **Lingual nerve** ✖

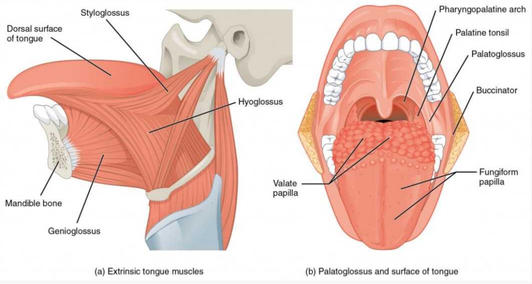
Answer

Taste from the anterior two-thirds of the tongue is carried by the chorda tympani, branch of the facial nerve.

Notes

The tongue is a muscular structure that forms part of the floor of the oral cavity and part of the anterior wall of the oropharynx. The anterior two-thirds of the tongue are in the oral cavity. The posterior root of the tongue is attached to the mandible and the hyoid bone. The anterior wall of the oropharynx inferior to the oropharyngeal isthmus is formed by the upper part of the posterior one-third of the tongue.

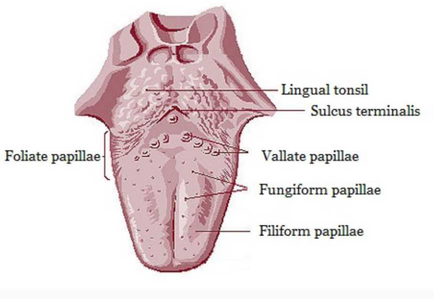
A pair of mucosal pouches (valleculae), one on each side of the midline, between the base of the tongue and epiglottis, are depressions formed between the midline mucosal fold and two lateral folds that connect the tongue to the epiglottis.



By OpenStax [CC BY 4.0], via Wikimedia Commons

Papillae and lingual tonsil

The oral (anterior two-thirds) and pharyngeal (posterior one-third) surfaces are separated by a V-shaped terminal sulcus of the tongue. The superior surface of the oral part of the tongue is covered by papillae, the majority of which have tastebuds on their surface. The mucosa of the pharyngeal surface of the tongue is irregular, because of the many small nodules of lymphoid tissue in the submucosa, collectively known as the lingual tonsil.



By Lesion (Own work) [CC BY-SA 3.0], via Wikimedia Commons

Nerve supply

- Sensation from the anterior two-thirds of the tongue is carried by the lingual nerve, branch of the mandibular nerve.
- Taste from the anterior two-thirds of the tongue is carried by the chorda tympani, branch of the facial nerve.
- Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.
- All muscles of the tongue are innervated by the hypoglossal nerve, except for the palatoglossus, which is innervated by the vagus nerve.

Lymphatics

All lymphatics from the tongue ultimately drain into the deep cervical chain of nodes along the internal jugular vein. The pharyngeal part of the tongue drains through the pharyngeal wall directly into mainly the jugulo-omohyoid node of the deep cervical chain. The oral part of the tongue drains both directly into the deep cervical nodes and indirectly into these nodes by passing first through the mylohyoid muscle and into submental and submandibular nodes.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 14 of 115



Regarding the paranasal sinuses, which of the following statements is INCORRECT:

a The maxillary sinuses drain into the middle meatus.

b The ethmoidal cells drain into the superior or middle meatus.

c The sphenoidal sinuses drains into the middle meatus.

d The frontal sinuses drain into the middle meatus.

e The frontal sinus is the most superior sinus.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

iPad 01:13 41%

Done Comment Undo

FRCEMSuccess

MENU

Anatomy: Forearm and Hand

Question 28 of 102

A 45 year old woman sustains an injury to the median nerve at the elbow after falling awkwardly. Which of the following clinical features are you least likely to see on examination:

a Weakness of pronation

b Weakness of wrist flexion

c Loss of flexion of the medial four digits.

d Loss of sensation to skin over the lateral palm and lateral three and a half digits

e Hand of Benediction appearance when the patient is asked to make a fist

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

FRCEM Success

We are an online revision resource for FRCEM Primary and Intermediate exam preparation.

Terms & Conditions
Get in Touch

PayPal

Resources

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- TeachMeAnatomy
- Trauma.org
- Radiopaedia
- Advanced Life Support Group
- Emergency Medicine Journal
- Lifeinthefastlane
- Instant Anatomy
- Patient.co.uk

FRCEMSuccess

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

iPad 01:26 38%

Done Comment Undo

a) **Loss of sensation to the dorsum of the medial hand** ✗

b) Weakness of flexion at the proximal interphalangeal joints of all four fingers

c) Loss of opposition of the thumb

d) Weakness of extension at the interphalangeal joints of all four fingers ✓

e) Weakness of extension of the thumb

Answer

The ulnar nerve innervates the interossei and the medial two lumbricals, which are important muscles in extension of the fingers at the interphalangeal joints. Flexion at the proximal interphalangeal joints is produced primarily by the flexor digitorum superficialis, innervated by the median nerve. Sensation to the dorsum of the medial hand is innervated by the dorsal cutaneous branch of the ulnar nerve which arises in the forearm, proximal to the site of laceration. Extension of the the thumb is primarily a function of the radial nerve, and opposition of the thumb, the median nerve.

Notes

The ulnar nerve is a continuation of the medial cord of the brachial plexus, containing fibres from the C8 – T1 nerve roots.

Nerve	Ulnar nerve
Nerve roots	C8 – T1
Plexus cords	Medial cord
Motor	All the intrinsic muscles of the hand (except for the thenar muscles and the lateral two

5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

iPad 01:26 38%

Done Comment Undo

Question 34 of 102



A 24 year old butcher has sustained a deep laceration to the distal crease of the wrist where he has cut through the ulnar nerve. Which of the following clinical findings would you most expect to see on examination:

a) **Loss of sensation to the dorsum of the medial hand** ✗
b) Weakness of flexion at the proximal interphalangeal joints of all four fingers
c) Loss of opposition of the thumb
d) Weakness of extension at the interphalangeal joints of all four fingers ✓
e) Weakness of extension of the thumb

Answer

The ulnar nerve innervates the interossei and the medial two lumbricals, which are important muscles in extension of the fingers at the interphalangeal joints. Flexion at the proximal interphalangeal joints is produced primarily by the flexor digitorum superficialis, innervated by the median nerve. Sensation to the dorsum of the medial hand is innervated by the dorsal cutaneous branch of the ulnar nerve which arises in the forearm, proximal to the site of laceration. Extension of the the thumb is primarily a function of the radial nerve, and opposition of the thumb, the median nerve.

Notes

The ulnar nerve is a continuation of the medial cord of the brachial plexus, containing fibres from the C8 – T1 nerve roots.

Nerve	Ulnar nerve
Nerve	C8 – T1

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

iPad 01:29 37%

Done Comment Undo

c) Lumbrical muscle

d) Interosseous muscle

e) Digital branch of the median nerve

6 Answered

7 Answered

8 Answered

9 Answered

10 Answered

11 Answered

12 Answered

Answer

The flexor digitorum superficialis is primarily responsible for flexion at the proximal interphalangeal joint and thus separation of this tendon from its attachment on the middle phalanx of the finger will result in loss of this movement. The flexor digitorum profundus flexes the distal interphalangeal joint. Flexion at the metacarpophalangeal joint is primarily produced by the lumbrical muscles with assistance from the interossei and the flexor digitorum profundus and superficialis. Abduction and adduction of the fingers at the metacarpophalangeal joint is produced by the interossei.

Notes

Hand movements are complex. The table below shows an overview of hand and thumb movements and the main muscles bringing about these movements.

Hand movements	Primary muscle (assisting muscles)
Flexion of MCPJ of digits 2 – 5	Lumbricals (flexor digitorum superficialis, flexor digitorum profundus, flexor digiti minimi, interossei)

iPad 02:09 29%

Done Comment Undo

Anatomy: Forearm and Hand



Question 79 of 102

A 48 year old presents to ED having sustained a deep laceration to his right upper limb. On examination he is unable to extend the interphalangeal joints of the fourth and fifth digits and extension of the interphalangeal joints of the second and third digits is very weak. Extension at the metacarpophalangeal joints is preserved in all digits. Which of the following nerves has most likely been injured:

a) Superficial branch of the ulnar nerve
b) **Deep branch of the ulnar nerve** ✔
c) Anterior interosseous nerve
d) Posterior interosseous nerve
e) Recurrent branch of the median nerve

Answer

The deep branch of the ulnar nerve innervates the medial two lumbricals and all of the interossei. There is loss of extension at the IPJs of the fourth and fifth digits due to paralysis of the medial two lumbricals and the interossei. Extension at the IPJs of the second and third digits are only weakened as the lateral two lumbricals are spared (innervated by the median nerve). Extension at the MCPJs of all five digits is a function of the radial nerve. The superficial branch of the ulnar nerve has only cutaneous function.

Notes

The ulnar nerve is a continuation of the medial cord of the brachial plexus, containing fibres from the C8 – T1 nerve roots.

Nerve	Ulnar nerve
Nerve	C8 – T1

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

Anatomy: Head

Question 14 of 115



Regarding the paranasal sinuses, which of the following statements is INCORRECT:

a The maxillary sinuses drain into the middle meatus.

b The ethmoidal cells drain into the superior or middle meatus.

c The sphenoidal sinuses drains into the middle meatus.

d The frontal sinuses drain into the middle meatus.

e The frontal sinus is the most superior sinus.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 14 of 115

Regarding the paranasal sinuses, which of the following statements is INCORRECT:

a) **The maxillary sinuses drain into the middle meatus.** ✖
b) The ethmoidal cells drain into the superior or middle meatus.
c) The sphenoidal sinuses drains into the middle meatus. ✔
d) The frontal sinuses drain into the middle meatus.
e) The frontal sinus is the most superior sinus.

Answer

The sphenoidal sinuses open onto the sphenoethmoidal recess of the nasal cavity.

Notes

There are four paired paranasal air sinuses – the ethmoidal cells and the sphenoidal, maxillary and frontal sinuses – named according to the bone in which the sinus is found.

The paranasal sinuses develop as outgrowths from the nasal cavities and erode into the surrounding bones.

All of the paranasal sinuses are lined by respiratory mucosa, open into the nasal cavities and are innervated by branches of the trigeminal nerve.

- The frontal sinuses are the most superior of the sinuses and drain onto the middle meatus of the lateral wall.
- The maxillary sinuses are the largest of the paranasal sinuses and drain onto the middle meatus of the lateral wall.
- The ethmoidal cells drain into the superior or middle meatus.
- The sphenoidal sinuses open into the sphenoethmoidal recess of the nasal cavity.

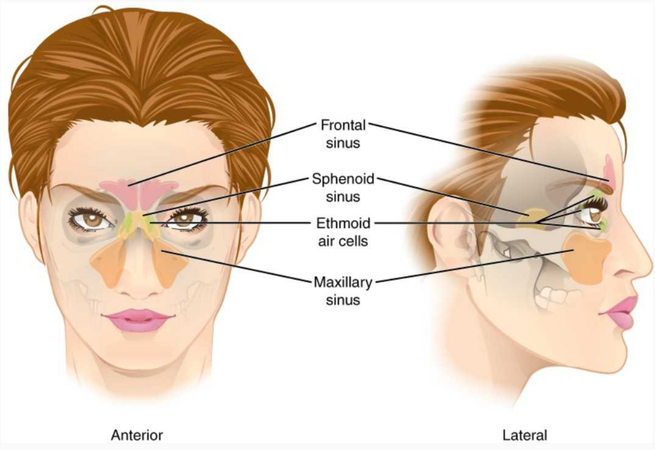
Developmental staging

The maxillary sinus is the first sinus to develop and is filled with fluid at birth and undergoes two phases of growth during years 0 – 3 and again at 6 – 12 years.

The frontal sinus is the last sinus to pneumatise; it is formed by the upward movement of anterior ethmoid cells after age 2, growth increases at age 6 and continues until late teenage years.

The sphenoid sinus starts to pneumatise at around 2 years of age and reaches its full size by the late teenage years.

The ethmoid sinuses are present at birth and develop rapidly, continuing to grow and pneumatise until the age of 12.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 15 of 115

The buccinator muscle is innervated by which of the following nerves:

a Vagus nerve

b Maxillary division of trigeminal nerve

c Mandibular division of trigeminal nerve

d Facial nerve

e Glossopharyngeal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 15 of 115

The buccinator muscle is innervated by which of the following nerves:

a) Vagus nerve ✗
b) Maxillary division of trigeminal nerve
c) Mandibular division of trigeminal nerve
d) Facial nerve ✓

e) Glossopharyngeal nerve

Answer

The buccinator muscle is innervated by the facial nerve.

Notes

The facial muscles act as muscles of facial expression, and as sphincters and dilators of the orifices of the face.

The facial muscles are all innervated by the facial nerve (CN VII).

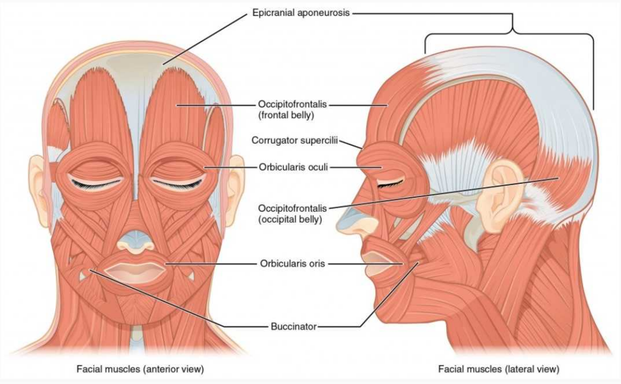
Muscle	Action
Orbicularis oculi	Closes eyelids gentle and forcefully
Occipitofrontalis	Raises eyebrows and wrinkles forehead
Orbicularis oris	Closes lips and protrudes lips as in whistling
Buccinator	Presses cheek against teeth, aids in forceful expulsion of air from distended cheeks

The orbicularis oculi is a large muscle located over the frontal and zygomatic bones and is responsible for closure of the eyelids, both gently (palpebral part) and forcefully as in screwing the eyes up (orbital part).

The occipitofrontalis is responsible for wrinkling the forehead, raising the eyebrows and drawing the scalp backwards. It has two bellies, the occipital belly originating from the superior nuchal line of the occipital bone and mastoid process of the temporal bone, and the frontal belly originating from the skin of the eyebrows; both heads insert onto the epicranial aponeurosis.

The orbicularis oris is a complex muscle consisting of fibres that completely encircle the mouth, responsible for closing the lips and protruding the lips (as in whistling).

The buccinator originates from the posterior parts of the maxilla and mandible, deep to the other facial muscles. Its muscle fibres run forwards to blend with those of the orbicularis oris muscle and to insert into the modiolus, which is a small button-shaped nodule of connective tissue at the interface between the muscles of the lips and cheeks on each side. The buccinator is responsible for pressing the cheek against the teeth which helps keeps the cheek taut and aids in mastication by preventing food from accumulating between the teeth and cheek. The muscle also assists in the forceful expulsion of air from the cheeks by compressing the distended cheeks.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 16 of 115

Regarding the nasal cavities, which of the following statements is CORRECT:

a The medial wall of the nasal cavity is characterised by three conchae extending from its surface.

b The nasolacrimal duct opens onto the superior nasal meatus.

c The olfactory nerve carries general sensation from the nasal cavities.

d Little's area is found on the anterior region of the medial wall and is a major site of epistaxis.

e The nasal cavity is lined by nonciliated columnar epithelial cells.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 16 of 115

Regarding the nasal cavities, which of the following statements is CORRECT:

a)
The medial wall of the nasal cavity is characterised by three conchae extending from its surface.

b) The nasolacrimal duct opens onto the superior nasal meatus.

c) The olfactory nerve carries general sensation from the nasal cavities.

d) Little's area is found on the anterior region of the medial wall and is a major site of epistaxis.

e) The nasal cavity is lined by noncilliated columnar epithelial cells.

Answer

The blood vessels supplying the nose form extensive anastomoses with each other, particularly in the anterior region of the medial wall where there are anastomoses between branches of the greater palatine (maxillary artery), sphenopalatine (maxillary artery), superior labial (facial artery) and anterior ethmoidal arteries (ophthalmic artery) – this area is known as Little's area and is the major site of epistaxis.

Notes

The nasal cavities are separated from each other by a midline nasal septum, from the oral cavity below by the hard palate and from the cranial cavity above by parts of the frontal, palatine, ethmoid and sphenoid bones. The nasal cavity is lined by ciliated epithelial cells which help trap and remove particulate matter from the airway.

Anatomical boundaries

Each nasal cavity has a floor, a roof, a medial and a lateral wall.

Space	Nasal cavity
Floor	Hard palate (palatine process of maxilla and horizontal plate of palatine bone)
Roof	Frontal bone, nasal bone, cribriform plate of ethmoid bone, sphenoid bone
Medial wall	Thin nasal septum (formed primarily from perpendicular plate of ethmoid bone, vomer and septal cartilage)
Lateral wall	Ethmoid bone, nasal bone, palatine bone, sphenoid bone, lacrimal bone, maxilla, conchae

The floor of each nasal cavity consists of soft tissues of the external nose and the upper surface of the palatine process of the maxilla and the horizontal plate of the palatine bone (which together form the hard palate).

The roof of the nasal cavity is formed:

- anteriorly by the nasal spine of the frontal bone and the nasal bones, and the lateral processes of the septal cartilage and cartilages of the external nose
- centrally by the cribriform plate of the ethmoid bone
- posteriorly by the sphenoid bone and palatine bone.

The medial wall of the nasal cavity is the mucosa-covered surface of the thin nasal septum.

Bony support for the lateral wall of the nasal cavity is provided by the ethmoid bone, palatine bone, sphenoid bone, lacrimal bones and maxillae.

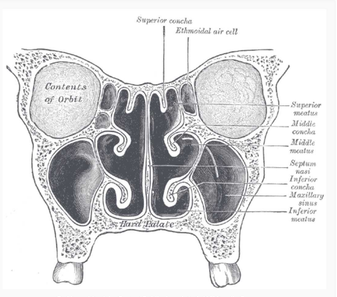
The lateral wall is characterised by three curved shelves of bone – the conchae – which run one above the other and project medially and inferiorly across the nasal cavity. These conchae increase the surface area of contact between tissues of the lateral wall and respired air.

The conchae divide each nasal cavity into four air channels:

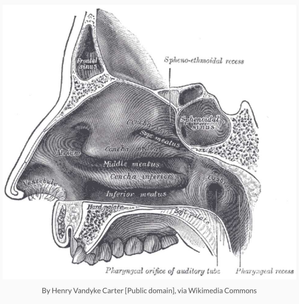
- an inferior nasal meatus (between the inferior concha and the nasal floor)
- a middle nasal meatus
- a superior nasal meatus
- a sphenoid-ethmoidal recess (between the superior concha and the nasal roof).

The openings of the paranasal sinuses are on the lateral wall and roof of the nasal cavities.

In addition the lateral wall also contains the nasolacrimal duct opening onto the inferior nasal meatus, draining tears from the eye into the nasal cavity.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Nerve supply

The nasal cavities are innervated by:

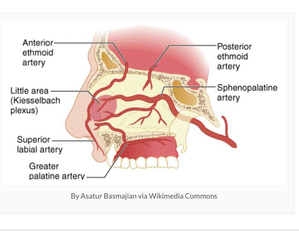
- The olfactory nerve – carrying olfaction
- The trigeminal nerve – carrying general sensation, anteriorly by the ophthalmic nerve and posteriorly by the maxillary nerve
- The facial nerve – carrying parasympathetic fibres to the nasal glands (which join branches of the maxillary nerve in the pterygopalatine fossa).

Blood supply

The nasal cavities have a rich vascular supply to allow them to alter the humidity and temperature of respired air.

Blood supply to the nasal cavity is by terminal branches of the maxillary and facial arteries (from the external carotid artery) and ethmoidal branches of the ophthalmic artery (from the internal carotid artery).

The vessels form extensive anastomoses with each other, particularly in the anterior region of the medial wall where there are anastomoses between branches of the greater palatine (maxillary artery), sphenopalatine (maxillary artery), superior labial (facial artery) and anterior ethmoidal arteries (ophthalmic artery) – this area is known as Little's area and is the major site of epistaxis.



By Asatur Basmajian via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 17 of 115

Regarding the temporomandibular joint (TMJ), which of the following statements is INCORRECT:

a The temporomandibular joint (TMJ) is a synovial joint.

b The TMJ is formed from the articulation between the head of the mandible and the petrous part of the temporal bone.

c Anterior dislocation of the TMJ can occur by yawning or taking a large bite.

d The TMJ is stabilised mainly by three extracapsular ligaments.

e The facial and auriculotemporal nerves may be injured in TMJ dislocation.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 17 of 115

Regarding the temporomandibular joint (TMJ), which of the following statements is INCORRECT:

a) The temporomandibular joint (TMJ) is a synovial joint. ✖

b) ✔
The TMJ is formed from the articulation between the head of the mandible and the petrous part of the temporal bone.

c) Anterior dislocation of the TMJ can occur by yawning or taking a large bite.

d) The TMJ is stabilised mainly by three extracapsular ligaments.

e) The facial and auriculotemporal nerves may be injured in TMJ dislocation.

Answer

The TMJ is formed between the condylar head of the mandible and the articular fossa and articular tubercle of the squamous part of the temporal bone.

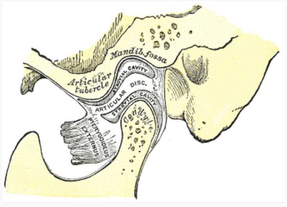
Notes

The temporomandibular joints allow opening and closing of the mouth and complex chewing and side-to-side movements of the lower jaw. Opening of the mouth involves both depression and protrusion of the mandible. Closing of the mouth involves elevation and retraction of the mandible.

Joint	Temporomandibular joint (TMJ)
Articulations	Condylar head of mandible with articular fossa and articular tubercle of squamous part of temporal bone
Stabilising factors	Lateral ligament, sphenomandibular ligament, stylomandibular ligament
Movements	Elevation and depression, retraction and protraction, side to side movements

TMJ joint

Each joint is synovial and formed between the condylar head of the mandible and the articular fossa and articular tubercle of the squamous part of the temporal bone.

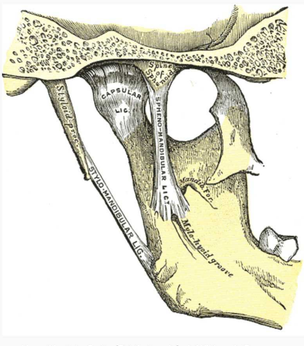


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Ligaments

The joint is stabilised by three extracapsular ligaments:

- the lateral (capsular) ligament extending from the articular tubercles of the temporal bone to the neck of the mandible
- the sphenomandibular ligament extending from the spine of the sphenoid bone at the base of the skull to the medial side of the ramus of the mandible
- the stylomandibular ligament extending from the styloid process of the temporal bone to the posterior margin of the mandible.



Henry Vandyke Carter [Public domain], via Wikimedia Commons

Joint movements

Joint movement	Muscles Involved
Depression	Digastric, geniohyoid, mylohyoid, lateral pterygoid, gravity
Elevation	Temporalis, masseter, medial pterygoid
Protraction	Lateral pterygoid, medial pterygoid
Retraction	Geniohyoid, digastric, temporalis, masseter

Movements of the mandible at the TMJ:

- Depression is generated by the digastric, geniohyoid, mylohyoid and lateral pterygoid muscles assisted by gravity.
- Elevation is generated by the temporalis, masseter and medial pterygoid muscles.
- Protraction is mainly achieved by the lateral pterygoid with some assistance by the medial pterygoid.
- Retraction is carried out by the geniohyoid and digastric muscles and by the posterior and deep fibres of the temporalis and masseter muscles respectively.

Clinical implications

The TMJ is less stable when the mouth is open. Anterior dislocation of the TMJ can occur by yawning or taking a large bite. The head of the mandible slips out of the mandibular fossa and is pulled anteriorly. The patient is unable to close their mouth. Posterior dislocation is uncommon but may occur due to a blow to the face. If traumatic, the facial and auriculotemporal nerves may be affected due to their close proximity to the joint.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 18 of 115



The occipitofrontalis muscle is responsible for which of the following:

a Blowing the cheeks out

b Screwing the eyes shut

c Opening the eyes

d Raising the eyebrows

e Protruding the lips

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 18 of 115

The occipitofrontalis muscle is responsible for which of the following:

a) **Blowing the cheeks out** ✗
b) Screwing the eyes shut
c) Opening the eyes
d) Raising the eyebrows ✓
e) Protruding the lips

Answer

The occipitofrontalis muscle acts to raise and eyebrows and wrinkle the forehead.

Notes

The facial muscles act as muscles of facial expression, and as sphincters and dilators of the orifices of the face.

The facial muscles are all innervated by the facial nerve (CN VII).

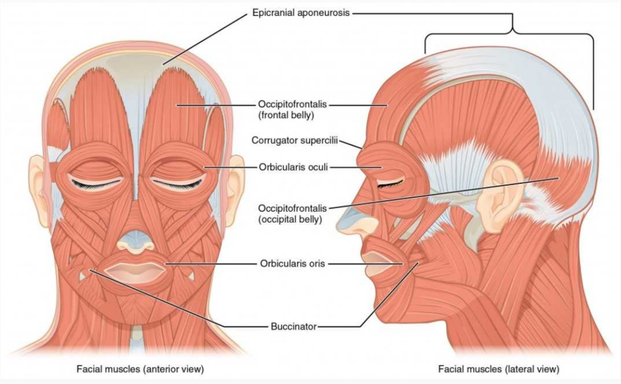
Muscle	Action
Orbicularis oculi	Closes eyelids gentle and forcefully
Occipitofrontalis	Raises eyebrows and wrinkles forehead
Orbicularis oris	Closes lips and protrudes lips as in whistling
Buccinator	Presses cheek against teeth, aids in forceful expulsion of air from distended cheeks

The orbicularis oculi is a large muscle located over the frontal and zygomatic bones and is responsible for closure of the eyelids, both gently (palpebral part) and forcefully as in screwing the eyes up (orbital part).

The occipitofrontalis is responsible for wrinkling the forehead, raising the eyebrows and drawing the scalp backwards. It has two bellies, the occipital belly originating from the superior nuchal line of the occipital bone and mastoid process of the temporal bone, and the frontal belly originating from the skin of the eyebrows; both heads insert onto the epicranial aponeurosis.

The orbicularis oris is a complex muscle consisting of fibres that completely encircle the mouth, responsible for closing the lips and protruding the lips (as in whistling).

The buccinator originates from the posterior parts of the maxilla and mandible, deep to the other facial muscles. Its muscle fibres run forwards to blend with those of the orbicularis oris muscle and to insert into the modiolus, which is a small button-shaped nodule of connective tissue at the interface between the muscles of the lips and cheeks on each side. The buccinator is responsible for pressing the cheek against the teeth which helps keeps the cheek taut and aids in mastication by preventing food from accumulating between the teeth and cheek. The muscle also assists in the forceful expulsion of air from the cheeks by compressing the distended cheeks.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 19 of 115



A 49 year old man complains of pain and tingling over his chin and lower lip, which later developed into a vesicular rash. You diagnose shingles. Which of the following nerves has most likely been affected in this case:

a Infraorbital nerve

b External nasal nerve

c Mental nerve

d Buccal nerve

e Lingual nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 20 of 115

A 21 year old female attends ED complaining of pain and blurred vision following trauma to her right eye. On examination, you note her right eye is looking directly upwards at rest and she is unable to look downwards. Which of the following muscles is most likely affected:

a Inferior oblique

b Inferior rectus

c Medial rectus

d Lateral rectus

e Superior rectus

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 20 of 115

A 21 year old female attends ED complaining of pain and blurred vision following trauma to her right eye. On examination, you note her right eye is looking directly upwards at rest and she is unable to look downwards. Which of the following muscles is most likely affected:

a) **Inferior oblique** ✗
b) Inferior rectus ✓
c) Medial rectus
d) Lateral rectus
e) Superior rectus

Answer

The inferior rectus muscle and the superior oblique are responsible for depression of the eye. The inferior rectus acts in all fields of gaze and the superior oblique in medial gaze. Paralysis of the inferior rectus muscle will result in the eye being pulled upwards by the unopposed superior rectus muscle.

Notes

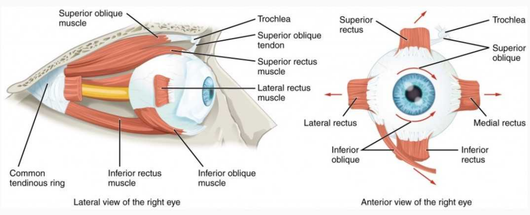
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 21 of 115

The orbicularis oculi muscle is innervated by which of the following nerves:

a Oculomotor nerve

b Optic nerve

c Ophthalmic division of trigeminal nerve

d Facial nerve

e Trochlear nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 21 of 115

The orbicularis oculi muscle is innervated by which of the following nerves:

a) Oculomotor nerve ✗
b) Optic nerve
c) Ophthalmic division of trigeminal nerve
d) Facial nerve ✓
e) Trochlear nerve

Answer

The orbicularis oculi muscle is innervated by the facial nerve.

Notes

The facial muscles act as muscles of facial expression, and as sphincters and dilators of the orifices of the face.

The facial muscles are all innervated by the facial nerve (CN VII).

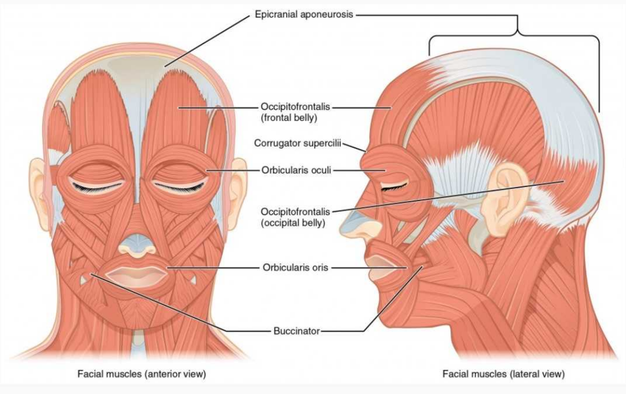
Muscle	Action
Orbicularis oculi	Closes eyelids gentle and forcefully
Occipitofrontalis	Raises eyebrows and wrinkles forehead
Orbicularis oris	Closes lips and protrudes lips as in whistling
Buccinator	Presses cheek against teeth, aids in forceful expulsion of air from distended cheeks

The orbicularis oculi is a large muscle located over the frontal and zygomatic bones and is responsible for closure of the eyelids, both gently (palpebral part) and forcefully as in screwing the eyes up (orbital part).

The occipitofrontalis is responsible for wrinkling the forehead, raising the eyebrows and drawing the scalp backwards. It has two bellies, the occipital belly originating from the superior nuchal line of the occipital bone and mastoid process of the temporal bone, and the frontal belly originating from the skin of the eyebrows; both heads insert onto the epicranial aponeurosis.

The orbicularis oris is a complex muscle consisting of fibres that completely encircle the mouth, responsible for closing the lips and protruding the lips (as in whistling).

The buccinator originates from the posterior parts of the maxilla and mandible, deep to the other facial muscles. Its muscle fibres run forwards to blend with those of the orbicularis oris muscle and to insert into the modiolus, which is a small button-shaped nodule of connective tissue at the interface between the muscles of the lips and cheeks on each side. The buccinator is responsible for pressing the cheek against the teeth which helps keeps the cheek taut and aids in mastication by preventing food from accumulating between the teeth and cheek. The muscle also assists in the forceful expulsion of air from the cheeks by compressing the distended cheeks.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 22 of 115

General sensation from the anterior two-thirds of the tongue is carried by which of the following nerves:

a Facial nerve

b Chorda tympani

c Glossopharyngeal nerve

d Hypoglossal nerve

e Lingual nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 22 of 115

General sensation from the anterior two-thirds of the tongue is carried by which of the following nerves:

a) Facial nerve ✗
b) Chorda tympani
c) Glossopharyngeal nerve
d) Hypoglossal nerve
e) Lingual nerve ✓

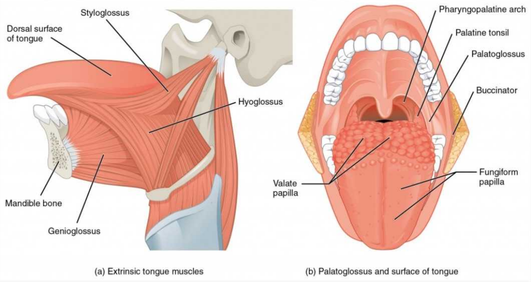
Answer

Sensation from the anterior two-thirds of the tongue is carried by the lingual nerve, branch of the mandibular nerve.

Notes

The tongue is a muscular structure that forms part of the floor of the oral cavity and part of the anterior wall of the oropharynx. The anterior two-thirds of the tongue are in the oral cavity. The posterior root of the tongue is attached to the mandible and the hyoid bone. The anterior wall of the oropharynx inferior to the oropharyngeal isthmus is formed by the upper part of the posterior one-third of the tongue.

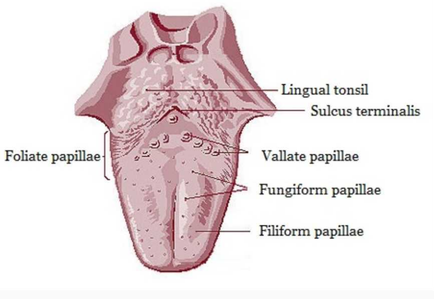
A pair of mucosal pouches (valleculae), one on each side of the midline, between the base of the tongue and epiglottis, are depressions formed between the midline mucosal fold and two lateral folds that connect the tongue to the epiglottis.



By OpenStax [CC BY 4.0], via Wikimedia Commons

Papillae and lingual tonsil

The oral (anterior two-thirds) and pharyngeal (posterior one-third) surfaces are separated by a V-shaped terminal sulcus of the tongue. The superior surface of the oral part of the tongue is covered by papillae, the majority of which have tastebuds on their surface. The mucosa of the pharyngeal surface of the tongue is irregular, because of the many small nodules of lymphoid tissue in the submucosa, collectively known as the lingual tonsil.



By Lesion (Own work) [CC BY-SA 3.0], via Wikimedia Commons

Nerve supply

- Sensation from the anterior two-thirds of the tongue is carried by the lingual nerve, branch of the mandibular nerve.
- Taste from the anterior two-thirds of the tongue is carried by the chorda tympani, branch of the facial nerve.
- Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.
- All muscles of the tongue are innervated by the hypoglossal nerve, except for the palatoglossus, which is innervated by the vagus nerve.

Lymphatics

All lymphatics from the tongue ultimately drain into the deep cervical chain of nodes along the internal jugular vein. The pharyngeal part of the tongue drains through the pharyngeal wall directly into mainly the jugulo-omohyoid node of the deep cervical chain. The oral part of the tongue drains both directly into the deep cervical nodes and indirectly into these nodes by passing first through the mylohyoid muscle and into submental and submandibular nodes.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 23 of 115

Regarding the external nose, which of the following statements is INCORRECT:

a The blood supply to the external nose is derived mainly from branches of the ophthalmic and facial arteries.

b The external nasal nerve cutaneously innervates the anterior lower half of the nose.

c The supraorbital nerve cutaneously innervates the bridge of the nose.

d The infraorbital nerve cutaneously innervates the sides of the nose.

e The infratrochlear nerve cutaneously innervates the anterior upper half of the nose.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 23 of 115

Regarding the external nose, which of the following statements is INCORRECT:

a)
The blood supply to the external nose is derived mainly from branches of the ophthalmic and facial arteries.

b) The external nasal nerve cutaneously innervates the anterior lower half of the nose.

c) The supraorbital nerve cutaneously innervates the bridge of the nose.

d) The infraorbital nerve cutaneously innervates the sides of the nose.

e) The infratrochlear nerve cutaneously innervates the anterior upper half of the nose.

Answer

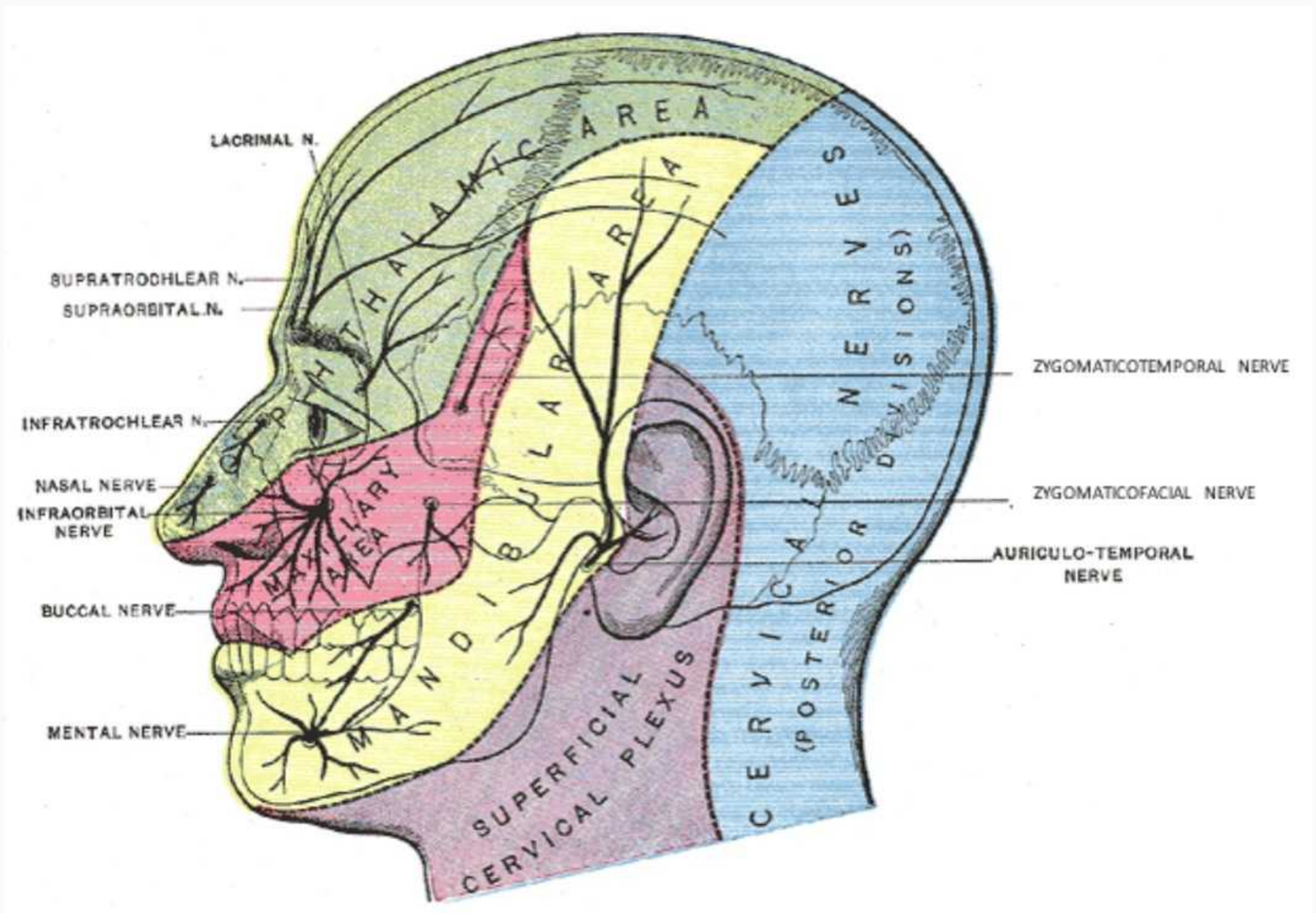
The infratrochlear nerve (ophthalmic nerve) innervates the bridge of the nose.

Notes

The blood supply to the external nose is derived mainly from branches of the ophthalmic and facial arteries.

The cutaneous supply of the external nose is from:

- the external nasal nerve (ophthalmic nerve) innervating the anterior lower half of the nose
- the infratrochlear nerve (ophthalmic nerve) innervating the bridge of the nose
- the infraorbital nerve (maxillary nerve) innervating the sides of the nose.



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

< Previous | Next >

Something wrong?

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 24 of 115

An 8 year old girl is brought to ED with a fever and a painful ear, which developed a few days after a sore throat. On examination you note that the patient has a red inflamed throat and a bulging tympanic membrane. You diagnose otitis media. Which of the following structures provided a route of infection for the throat infection to spread to the middle ear:

a Internal acoustic meatus

b External acoustic meatus

c Eustachian tube

d Nasolacrimal duct

e Sphenoid-ethmoidal recess

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 24 of 115

An 8 year old girl is brought to ED with a fever and a painful ear, which developed a few days after a sore throat. On examination you note that the patient has a red inflamed throat and a bulging tympanic membrane. You diagnose otitis media. Which of the following structures provided a route of infection for the throat infection to spread to the middle ear:

a) Internal acoustic meatus ✗
b) External acoustic meatus
c) Eustachian tube ✓
d) Nasolacrimal duct
e) Sphenoid-ethmoidal recess

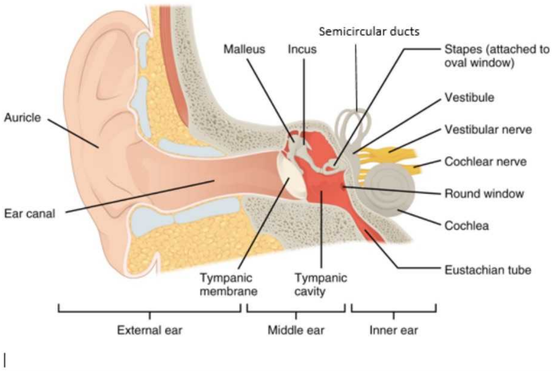
Answer

The eustachian tube (pharyngotympanic tube, auditory tube) connects the nasopharynx and the middle ear and is the conduit for spreading infections.

Notes

The ear is the organ of hearing and balance. It is divided into

- the external ear – consisting of the auricle (pinna) and the external acoustic meatus
- the middle ear – a cavity in the petrous part of the temporal bone bounded laterally by the tympanic membrane and medially by the lateral wall of the internal ear
- the internal ear – a series of cavities within the petrous part of the temporal bone bounded laterally by the middle ear and medially by the internal acoustic meatus.



By OpenStax [CC BY 4.0], via Wikimedia Commons

The middle ear

The middle ear is an air-filled cavity in the petrous temporal bone between the tympanic membrane laterally and the lateral wall of the internal wall medially.

Its basic function is to transmit vibrations of the tympanic membrane across the cavity of the middle ear to the internal ear which it does through three interconnected bones – the malleus (connected to the tympanic membrane), the incus (connected to the malleus) and the stapes (connected to the incus and attached to the lateral wall of the internal ear at the oval window).

The middle ear communicates with the mastoid area posteriorly and the nasopharynx (via the pharyngotympanic tube) anteriorly. The pharyngotympanic tube equalizes pressure on both sides of the tympanic membrane.

The mucous membrane lining the mastoid air cells is continuous with the mucous membranes throughout the middle ear. Therefore infections in the middle ear can easily spread into the mastoid area (and from here to the middle cranial fossa).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 25 of 115

The masseter muscle is primarily responsible for which of the following movements:

a Retraction of the mandible

b Protraction of the mandible

c Side to side movements of the mandible

d Elevation of the mandible

e Depression of the mandible

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 25 of 115

The masseter muscle is primarily responsible for which of the following movements:

a) **Retraction of the mandible** ✗
b) Protraction of the mandible
c) Side to side movements of the mandible
d) Elevation of the mandible ✓
e) Depression of the mandible

Answer

The masseter muscle is a powerful muscle of mastication that elevates the mandible.

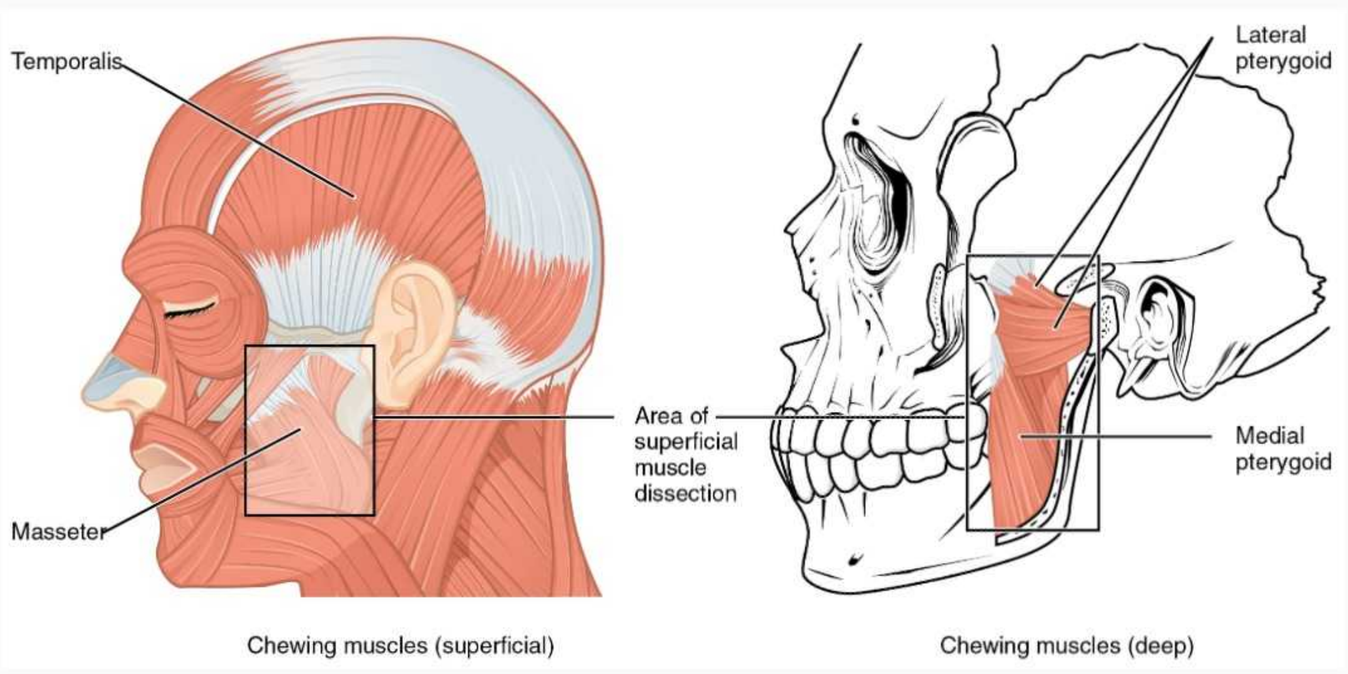
Notes

Muscle	Masseter
Origin	Zygomatic arch and maxillary process of zygomatic bone
Insertion	Lateral surface of ramus of mandible
Action	Elevation of mandible
Innervation	Mandibular division of trigeminal nerve

The masseter muscle is a powerful muscle of mastication that elevates the mandible.

It overlies the lateral surface of the ramus of the mandible. It originates from the zygomatic arch and the maxillary process of the zygomatic bone and inserts onto the lateral surface of the ramus of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 26 of 115

Regarding the orbit, which of the following statements is INCORRECT:

a The orbit is primarily supplied by the ophthalmic artery, branch of the external carotid artery.

b The venous drainage of the orbit is via superior and inferior ophthalmic veins.

c The ophthalmic veins communicate with emissary veins.

d The lymph drainage of the orbit is to deep cervical nodes via preauricular and parotid groups.

e Infection of the orbit can predispose to cavernous sinus thrombosis.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 26 of 115

Regarding the orbit, which of the following statements is INCORRECT:

a The orbit is primarily supplied by the ophthalmic artery, branch of the external carotid artery.

b The venous drainage of the orbit is via superior and inferior ophthalmic veins.

c The ophthalmic veins communicate with emissary veins.

d The lymph drainage of the orbit is to deep cervical nodes via preauricular and parotid groups.

e Infection of the orbit can predispose to cavernous sinus thrombosis.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 26 of 115

Regarding the orbit, which of the following statements is INCORRECT:

a)
The orbit is primarily supplied by the ophthalmic artery, branch of the external carotid artery.

b) The venous drainage of the orbit is via superior and inferior ophthalmic veins.

c) The ophthalmic veins communicate with emissary veins.

d) The lymph drainage of the orbit is to deep cervical nodes via preauricular and parotid groups.

e) Infection of the orbit can predispose to cavernous sinus thrombosis.

Answer

The orbit is primarily supplied by the ophthalmic artery, which is a branch of the internal carotid artery.

Notes

The ophthalmic artery (branch of the internal carotid artery) is the prime artery of blood supply to the orbit and supplies all the orbital muscles, the lacrimal gland and the eyeball.

The venous drainage of the orbit is via the superior and inferior ophthalmic veins. Because the ophthalmic veins communicate with the cavernous sinus via emissary veins, they act as a route by which infections can spread to the cranial cavity and can predispose to cavernous sinus thrombosis.

The lymphatic drainage of the orbit is to deep cervical nodes via the preauricular and parotid groups.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 27 of 115

In adults, there are normally how many teeth:

a 28

b 30

c 32

d 34

e 36

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 27 of 115

In adults, there are normally how many teeth:

a) 28
b) 30
c) 32 ✔
d) 34
e) 36

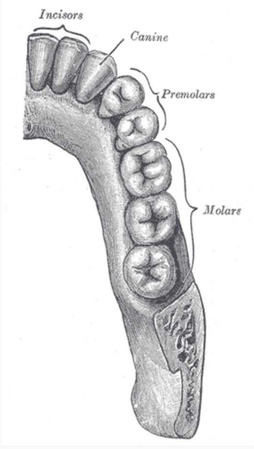
Answer

In adults, there are 32 teeth, 16 in the upper jaw and 16 in the lower jaw.

Notes

The teeth are attached to sockets in the upper alveolar arch on the maxilla and the lower alveolar arch on the mandible. The gingivae are specialised regions of oral mucosa that surround the teeth and cover adjacent regions of the alveolar bone.

In adults, there are 32 teeth, 16 in the upper jaw and 16 in the lower jaw. On each side in both upper and lower arches, there are two incisors, one canine, two premolars and three molar teeth. Two successive sets of teeth develop in humans; deciduous teeth emerging between six months and two years of age, and permanent teeth, which begin to emerge and replace the deciduous teeth at around age six years.

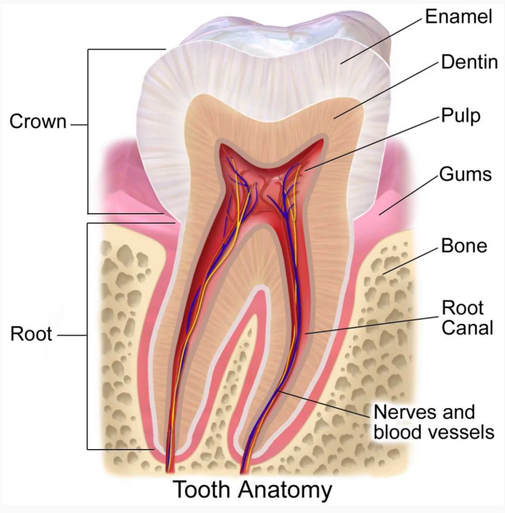


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

All nerves that innervate the teeth and gingivae are branches of the trigeminal nerve. The lower teeth are innervated by the inferior alveolar nerve (branch of the mandibular nerve). The upper teeth are innervated by the anterior, middle and posterior superior alveolar nerves (branches of the maxillary nerve).

Anaesthesia of the inferior alveolar nerve can be performed by placing the needle lateral to the anterior arch of the fauces (palatoglossal arch) in the oral cavity and advancing along the medial border around the inferior third of the ramus of the mandible. It is also possible to anaesthetise the infraorbital and buccal nerves.

The portion of the tooth exposed to the oral cavity is the dental crown, and the portion below the dental crown is the tooth root. The dental pulp cavity exists in the centre of the tooth containing the pulp which consist of blood vessels, lymph vessels and nerve fibres.



Blausen.com staff. "Blausen gallery 2014". Wikiversity Journal of Medicine. DOI:10.15347/wjm/2014.010. ISSN 20018762. (Own work) [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 28 of 115

The temporalis muscles inserts onto which of the following structures:

a Maxilla

b Anterior margin of mandible

c Mastoid process

d Posterior margin of mandible

e Zygomatic arch

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 28 of 115

The temporalis muscles inserts onto which of the following structures:

a) Maxilla ✗
b) Anterior margin of mandible ✓
c) Mastoid process
d) Posterior margin of mandible
e) Zygomatic arch

Answer

The temporalis muscle inserts onto the coronoid process of the mandible and along the anterior margin of the ramus of the mandible (almost to the last molar tooth).

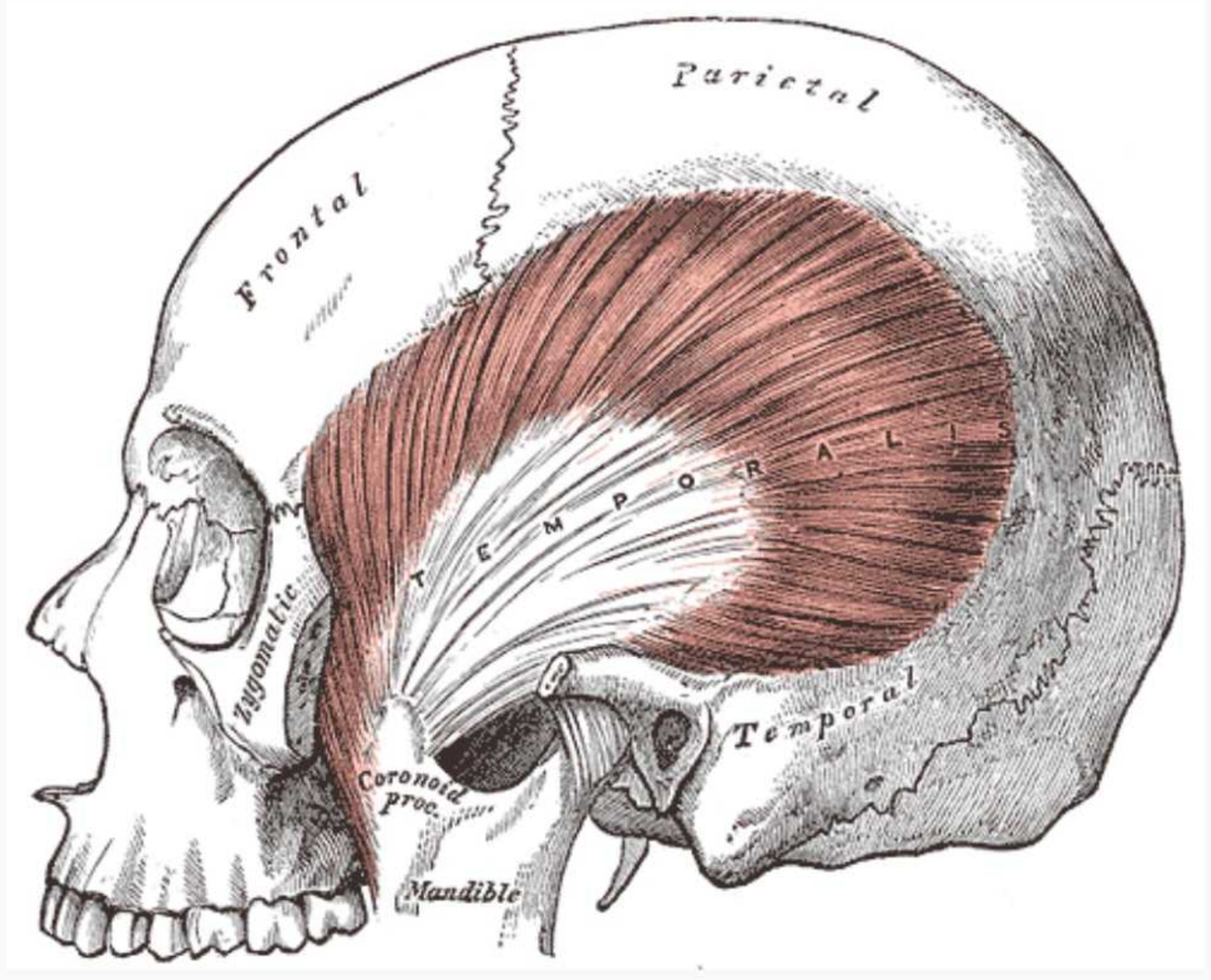
Notes

Muscle	Temporalis
Origin	Bony surface of temporal fossa superior to the inferior temporal line
Insertion	Coronoid process of mandible and along anterior margin of ramus of mandible
Action	Elevation of mandible, retraction of mandible, side-to-side movements of mandible
Innervation	Mandibular division of trigeminal nerve

The temporalis muscle is a large fan-shaped muscle that fills much of the temporal fossa. It originates from the bony surfaces of the temporal fossa superiorly to the inferior temporal line and is attached laterally to the surface of the temporal fascia. Distally it inserts onto the coronoid process of the mandible and along the anterior margin of the ramus of the mandible (almost to the last molar tooth).

The temporalis is a powerful elevator of the mandible, acts to retract the mandible and also participates in side-to-side movements of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 29 of 115

The masseter muscle originates from which of the following structures:

a Temporal fossa

b Zygomatic arch

c Mastoid process

d Infratemporal fossa

e Great wing of sphenoid

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 29 of 115

The masseter muscle originates from which of the following structures:

a) Temporal fossa
b) **Zygomatic arch** ✔
c) Mastoid process
d) Infratemporal fossa
e) Great wing of sphenoid

Answer

The masseter muscle originates from the zygomatic arch and the maxillary process of the zygomatic bone and inserts onto the lateral surface of the ramus of the mandible.

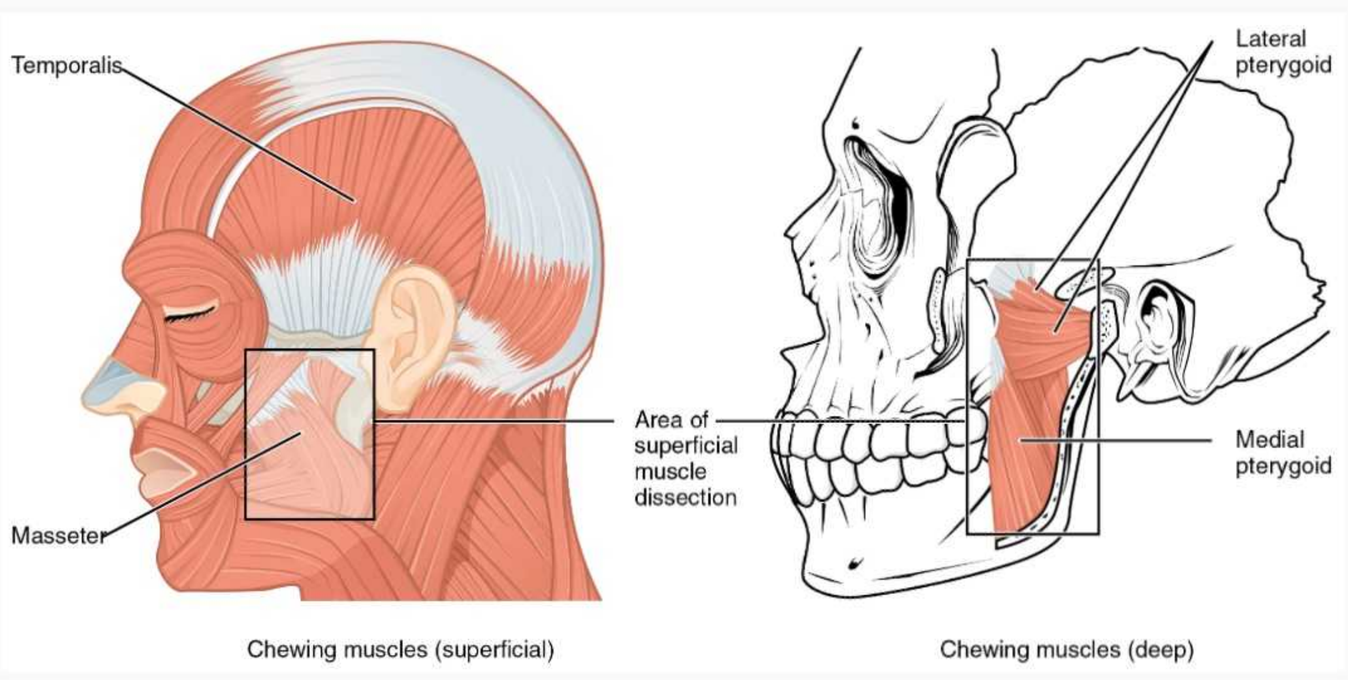
Notes

Muscle	Masseter
Origin	Zygomatic arch and maxillary process of zygomatic bone
Insertion	Lateral surface of ramus of mandible
Action	Elevation of mandible
Innervation	Mandibular division of trigeminal nerve

The masseter muscle is a powerful muscle of mastication that elevates the mandible.

It overlies the lateral surface of the ramus of the mandible. It originates from the zygomatic arch and the maxillary process of the zygomatic bone and inserts onto the lateral surface of the ramus of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 30 of 115



The skin over the tip of the nose is primarily supplied by which of the following nerves:

a Lacrimal nerve

b Infratrochlear nerve

c Buccal nerve

d External nasal nerve

e Infraorbital nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 30 of 115

The skin over the tip of the nose is primarily supplied by which of the following nerves:

a) **Lacrimal nerve** ✗
b) Infratrochlear nerve
c) Buccal nerve
d) External nasal nerve ✓
e) Infraorbital nerve

Answer

The external nasal nerve, branch of the ophthalmic nerve, innervates the anterior part of the nose.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

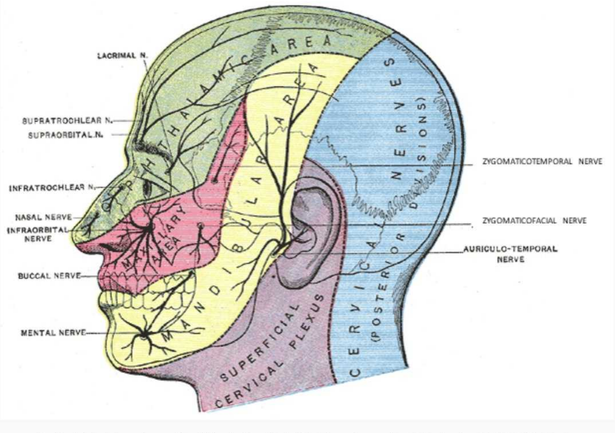
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 31 of 115

Regarding the internal ear, which of the following statements is CORRECT:

a The malleus, incus and stapes are components of the internal ear.

b The internal ear is located in the squamous part of the temporal bone.

c The cochlear duct is the organ of hearing.

d The utricle and saccule are responsible for transmitting sound.

e The pharyngotympanic tube connects the inner ear to the nasopharynx.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 31 of 115

Regarding the internal ear, which of the following statements is CORRECT:

a) **The malleus, incus and stapes are components of the internal ear.** ✗
b) The internal ear is located in the squamous part of the temporal bone.
c) The cochlear duct is the organ of hearing. ✓
d) The utricle and saccule are responsible for transmitting sound.
e) The pharyngotympanic tube connects the inner ear to the nasopharynx.

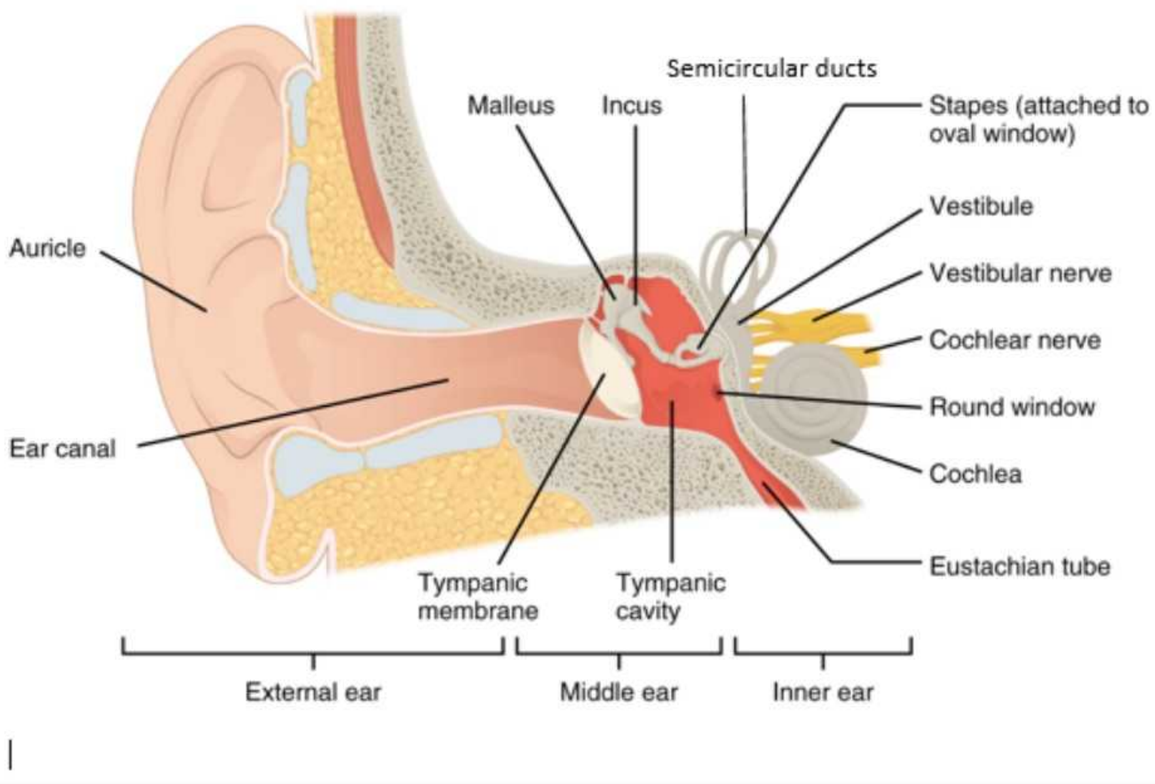
Answer

The inner ear is located in the petrous part of the temporal bone. The cochlear duct is the organ of hearing. The semicircular ducts and sacs (utricle and saccule) are the organs of balance. The malleus, incus and stapes are components of the middle ear. The pharyngotympanic tube connects the middle ear with the nasopharynx.

Notes

The ear is the organ of hearing and balance. It is divided into:

- the external ear – consisting of the auricle (pinna) and the external acoustic meatus
- the middle ear – a cavity in the petrous part of the temporal bone bounded laterally by the tympanic membrane and medially by the lateral wall of the internal ear
- the internal ear – a series of cavities within the petrous part of the temporal bone bounded laterally by the middle ear and medially by the internal acoustic meatus.



By OpenStax [CC BY 4.0], via Wikimedia Commons

The internal ear

The internal ear consists of a series of bony cavities in the petrous part of the temporal bone and membranous sacs and ducts within these cavities. The structures of the inner ear convey information to the brain about balance and hearing. The cochlear duct is the organ of hearing. The semicircular ducts and sacs (utricle and saccule) are the organs of balance.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 32 of 115

The levator palpebrae superioris muscle is innervated by which of the following nerves:

a Facial nerve

b Ophthalmic nerve

c Optic nerve

d Oculomotor nerve

e Sympathetic fibres

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 32 of 115

The levator palpebrae superioris muscle is innervated by which of the following nerves:

a) Facial nerve ✖
b) Ophthalmic nerve
c) Optic nerve
d) Oculomotor nerve ✔
e) Sympathetic fibres

Answer

The levator palpebrae superioris muscle originates from the roof of the orbit and inserts into the superior tarsus, is innervated by the oculomotor nerve and raises the upper eyelid.

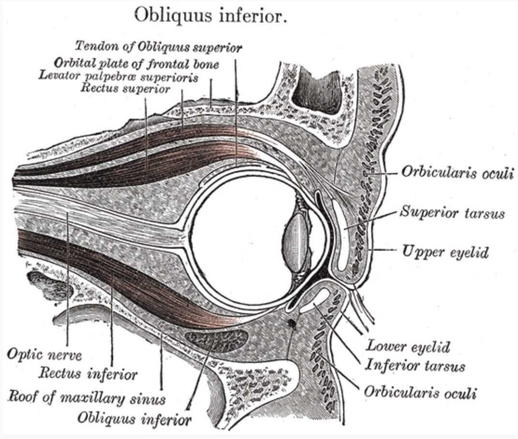
Notes

The upper and lower eyelids are anterior structures that protect the eyeball when closed. The space between the eyelids is the palpebral fissure.

The layers of the eyelids consist of (from anterior to posterior)

- skin
- subcutaneous tissue
- voluntary muscle
- the orbital septum (an extension of periosteum which attaches to the tarsus)
- the tarsus (a plate of dense connective tissue which provide the major support for the eyelid)
- conjunctiva (a thin membrane, composed primarily of stratified squamous epithelium, which covers the posterior surface of each eyelid before reflecting onto the sclera of the eyeball).

The upper and lower eyelids are basically the same, except for the addition of two muscles in the upper eyelid (the levator palpebrae superioris and the superior tarsal muscle).



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Muscles

The orbicularis oculi muscle is innervated by the facial nerve and closes the eyelids. Loss of function of the orbicularis oculi causes an inability to close the eyelids tightly and a drooping of the lower eyelid (ectropion) resulting in spillage of tears. This leads to drying of the cornea, with subsequent ulceration and secondary infection.

The levator palpebrae superioris muscle originates from the roof of the orbit and inserts into the superior tarsus, is innervated by the oculomotor nerve and raises the upper eyelid. The superior tarsal muscle is a collection of smooth muscle fibres in companion with the levator palpebrae superioris, innervated by postganglionic sympathetic fibres from the superior cervical ganglion which helps to maintain upper eyelid opening. Loss of function of the levator palpebrae superioris or the superior tarsal muscle results in a complete or partial ptosis respectively.

Innervation

The sensory innervation of the eyelids and conjunctiva is from:

- the supraorbital nerve (ophthalmic nerve)
- the supratrochlear (ophthalmic nerve)
- the infratrochlear nerve (ophthalmic nerve)
- lacrimal branches (ophthalmic nerve)
- the infraorbital nerve (maxillary nerve).

Glands

Embedded in the tarsal plates are modified sebaceous tarsal glands (Meibomian glands) which empty an oily substance onto the free margin of each eyelid that increases the viscosity of tears and decreases the rate of evaporation of tears from the surface of the eyeball.

Blockage and inflammation of a tarsal gland is a chalazion and is on the inner surface of the eyelid. External sebaceous and sweat glands associated with the eyelash follicles may also become blocked and inflamed causing a stye on the edge of the eyelid.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 33 of 115

A 23 year old Polish man presents to ED with fever, headache and painful swollen parotid glands. You suspect mumps. Which of the following nerves is responsible for the pain the patient complains of:

a Facial nerve

b Auriculotemporal nerve

c Buccal nerve

d Zygomaticofacial nerve

e Zygomaticotemporal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 33 of 115

A 23 year old Polish man presents to ED with fever, headache and painful swollen parotid glands. You suspect mumps. Which of the following nerves is responsible for the pain the patient complains of:

a) **Facial nerve** ✗
b) Auriculotemporal nerve ✓
c) Buccal nerve
d) Zygomaticofacial nerve
e) Zygomaticotemporal nerve

Answer

Mumps irritates the auriculotemporal nerve, causing severe pain because of inflammation and swelling of the parotid gland with stretching of its capsule. Pain is exacerbated by compression from swallowing or chewing.

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

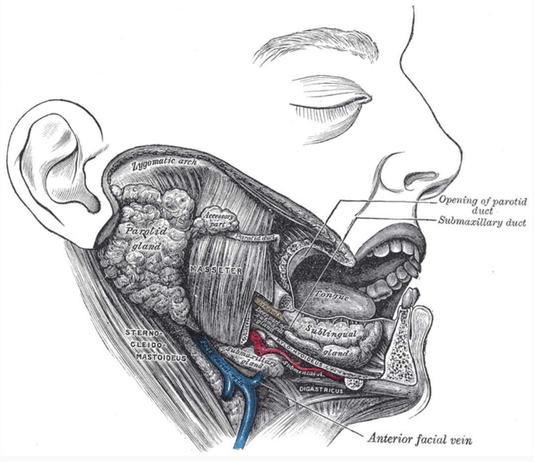
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

Anatomy: Head



Question 34 of 115

The content of the infratemporal fossa includes all of the following structures EXCEPT for:

a Sphenomandibular ligament

b Maxillary artery

c Medial and lateral pterygoid muscles

d Maxillary nerve

e Pterygoid venous plexus

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 34 of 115

The content of the infratemporal fossa includes all of the following structures EXCEPT for:

a) **Sphenomandibular ligament** ✗
b) Maxillary artery
c) Medial and lateral pterygoid muscles
d) Maxillary nerve ✓
e) Pterygoid venous plexus

Answer

The most important structures of the infratemporal fossa are the sphenomandibular ligament, medial and lateral pterygoid muscles, maxillary artery, mandibular nerve, chorda tympani nerve, lesser petrosal nerve and pterygoid venous plexus. The maxillary nerve does not pass through the infratemporal fossa.

Notes

The wedge-shaped infratemporal fossa lies inferior to the temporal fossa and the skull base, between the ramus of the mandible laterally and the wall of the pharynx medially.

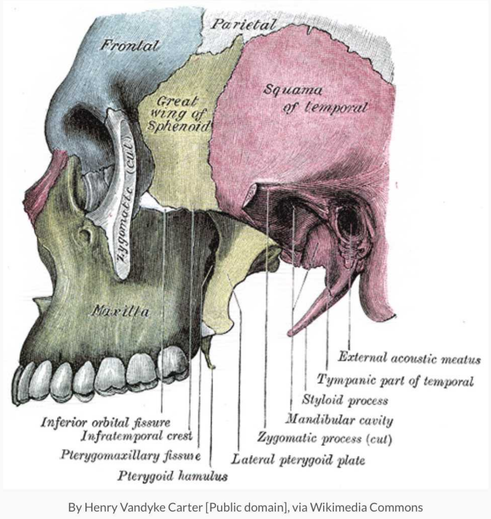
Space	Infratemporal fossa
Roof	Inferior surface of greater wing of sphenoid and temporal bone
Lateral wall	Medial surface of ramus of mandible
Medial wall	Lateral plate of pterygoid process, pharynx and soft palate
Anterior wall	Posterior surface of maxilla
Contents	Sphenomandibular ligament, medial and lateral pterygoid muscles, maxillary artery, mandibular nerve, chorda tympani nerve, lesser petrosal nerve, pterygoid venous plexus

Anatomical boundaries:

- The roof is formed by the inferior surfaces of the greater wing of the sphenoid and the temporal bone, and is open superiorly to the temporal fossa.
- The lateral wall is the medial surface of the ramus of the mandible.
- The medial wall is formed anteriorly by the lateral plate of the pterygoid process and more posteriorly by the pharynx and by the tensor and levator veli palatini muscles of the soft palate.
- The anterior wall is formed by part of the posterior surface of the maxilla.
- Posteroinferiorly, the infratemporal fossa is open to the neck.

Major contents of this fossa include:

- the sphenomandibular ligament
- the medial and lateral pterygoid muscles
- the maxillary artery (and its branches including the middle meningeal artery)
- the mandibular nerve (and its sensory branches – the auriculotemporal, buccal, lingual and inferior alveolar nerves)
- the chorda tympani (branch of the facial nerve)
- the lesser petrosal nerve (originating from the glossopharyngeal nerve)
- the pterygoid plexus of veins.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 35 of 115

Which of the following paranasal sinuses are present at birth:

a Frontal and maxillary

b Maxillary and ethmoidal

c Ethmoidal and sphenoidal

d Frontal

e Sphenoidal

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 35 of 115

Which of the following paranasal sinuses are present at birth:

a) **Frontal and maxillary** ✗
b) Maxillary and ethmoidal ✓
c) Ethmoidal and sphenoidal
d) Frontal
e) Sphenoidal

Answer

The maxillary and ethmoid sinuses are present at birth.

Notes

There are four paired paranasal air sinuses – the ethmoidal cells and the sphenoidal, maxillary and frontal sinuses – named according to the bone in which the sinus is found.

The paranasal sinuses develop as outgrowths from the nasal cavities and erode into the surrounding bones.

All of the paranasal sinuses are lined by respiratory mucosa, open into the nasal cavities and are innervated by branches of the trigeminal nerve.

- The frontal sinuses are the most superior of the sinuses and drain onto the middle meatus of the lateral wall.
- The maxillary sinuses are the largest of the paranasal sinuses and drain onto the middle meatus of the lateral wall.
- The ethmoidal cells drain into the superior or middle meatus.
- The sphenoidal sinuses open into the sphenoethmoidal recess of the nasal cavity.

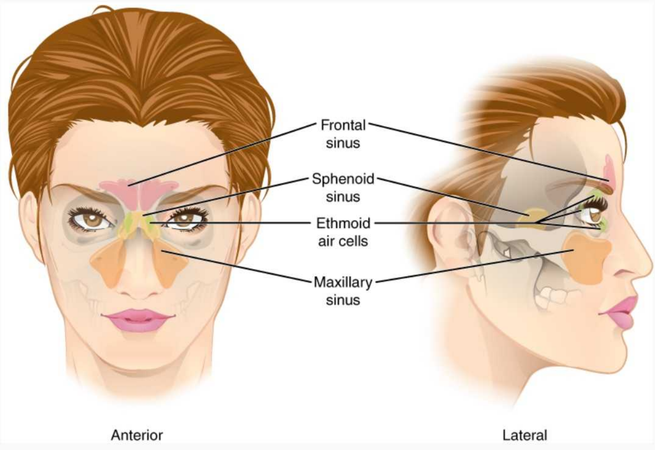
Developmental staging

The maxillary sinus is the first sinus to develop and is filled with fluid at birth and undergoes two phases of growth during years 0 – 3 and again at 6 – 12 years.

The frontal sinus is the last sinus to pneumatise; it is formed by the upward movement of anterior ethmoid cells after age 2, growth increases at age 6 and continues until late teenage years.

The sphenoid sinus starts to pneumatise at around 2 years of age and reaches its full size by the late teenage years.

The ethmoid sinuses are present at birth and develop rapidly, continuing to grow and pneumatise until the age of 12.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 36 of 115

The skin of the lower lip and chin is primarily supplied by which of the following nerves:

a Buccal nerve

b Infraorbital nerve

c Infratrochlear nerve

d Mental nerve

e Zygomaticofacial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 36 of 115

The skin of the lower lip and chin is primarily supplied by which of the following nerves:

a) Buccal nerve ✖
b) Infraorbital nerve
c) Infratrochlear nerve
d) Mental nerve ✔
e) Zygomaticofacial nerve

Answer

The mental nerve, branch of the mandibular nerve, innervates the skin and mucous membranes of the lower lip and the skin of the chin.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

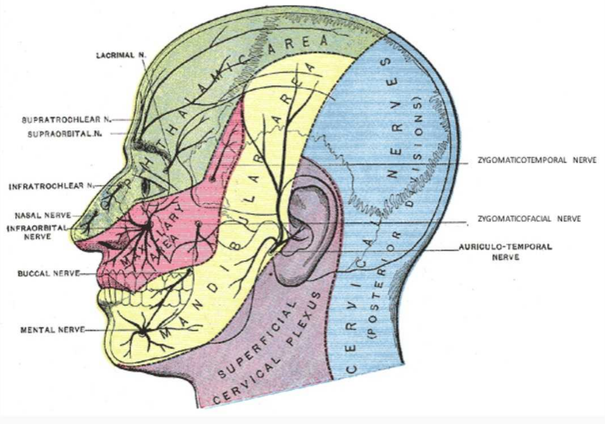
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 37 of 115

Elevation of the eyeball is primarily produced by which of the following muscles:

a Superior rectus and superior oblique

b Inferior rectus and superior oblique

c Superior rectus and inferior oblique

d Inferior rectus and inferior oblique

e Superior rectus and medial rectus

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 37 of 115

Elevation of the eyeball is primarily produced by which of the following muscles:

a) **Superior rectus and superior oblique** ✗
b) Inferior rectus and superior oblique
c) Superior rectus and inferior oblique ✓
d) Inferior rectus and inferior oblique
e) Superior rectus and medial rectus

Answer

Elevation of the eyeball is produced by the superior rectus and the inferior oblique muscles.

Notes

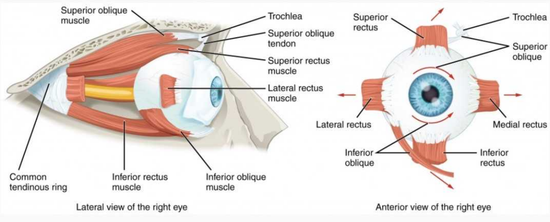
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 38 of 115

Regarding the blood supply of the scalp, which of the following statements is INCORRECT:

a The scalp is prone to poor wound healing due to its poor blood supply.

b Veins draining the scalp follow the arterial pattern.

c The scalp receives its blood supply in part from the ophthalmic artery.

d The scalp receives its blood supply from branches of both the external and internal carotid artery.

e The posterior auricular vein communicates with the sigmoid sinus.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 38 of 115

Regarding the blood supply of the scalp, which of the following statements is INCORRECT:

a) The scalp is prone to poor wound healing due to its poor blood supply. ✔

b) **Veins draining the scalp follow the arterial pattern.** ✖

c) The scalp receives its blood supply in part from the ophthalmic artery.

d) The scalp receives its blood supply from branches of both the external and internal carotid artery.

e) The posterior auricular vein communicates with the sigmoid sinus.

Answer

The scalp has an extremely rich blood supply which it receives from branches of the external carotid artery and the internal carotid artery (via its ophthalmic branch). Veins draining the scalp follow the arterial pattern and the posterior auricular vein communicates with the sigmoid sinus via the mastoid emissary vein; in this way infections of the ear or mastoid can spread intracranially.

Notes

The arterial supply of the scalp is from branches of the external carotid artery or the ophthalmic artery (branch of the internal carotid artery) which form a rich anastomosing network.

The scalp has an extremely rich blood supply, so lacerations of the scalp tend to bleed profusely. Scalp bleeding is predominantly arterial, firstly because in the erect position venous pressure is extremely low and secondly because the vessels do not retract and close when lacerated because the dense connective tissue in which they are found holds them open.

Veins draining the scalp follow the arterial pattern. The posterior auricular vein drains the area of the scalp posterior to the ear. The sigmoid sinus is connected with the exterior by the mastoid emissary vein which joins the posterior auricular vein. In this way infections of the ear or mastoid may spread intracranially.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 39 of 115

The muscles of the soft palate (other than the tensor veli palatini) are innervated by which of the following nerves:

a Facial nerve

b Mandibular nerve

c Hypoglossal nerve

d Glossopharyngeal nerve

e Vagus nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 39 of 115

The muscles of the soft palate (other than the tensor veli palatini) are innervated by which of the following nerves:

a) Facial nerve ✗
b) Mandibular nerve
c) Hypoglossal nerve
d) Glossopharyngeal nerve
e) Vagus nerve ✓

Answer

All of the muscles of the soft palate are innervated by the vagus nerve (from the pharyngeal plexus), except for the tensor veli palatini, which is innervated by a branch of the mandibular nerve.

Notes

The soft palate continues posteriorly from the hard palate and acts as a valve that can be:

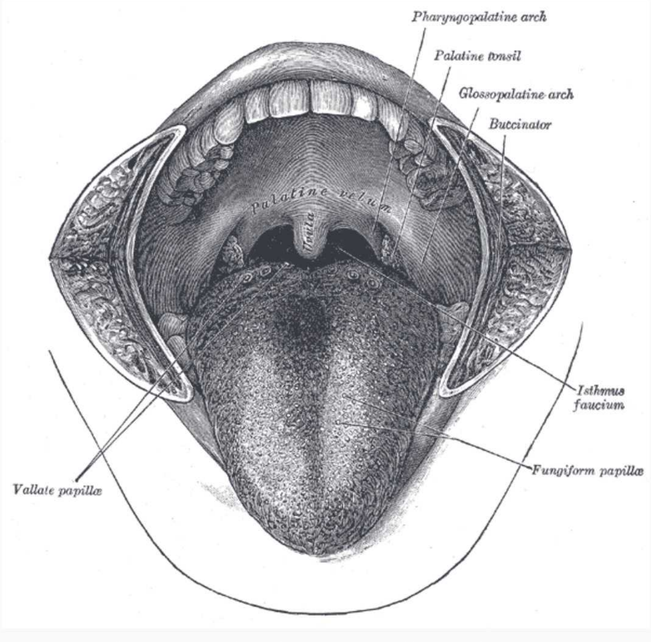
- depressed to help close the oropharyngeal isthmus and seal off the oral cavity from the oropharynx
- elevated to separate the nasopharynx from the oropharynx.

The soft palate is formed and moved by five paired muscles. The small muscular projection that hangs from the posterior free margin of the soft palate is the uvula.

All of the muscles of the soft palate are innervated by the vagus nerve (from the pharyngeal plexus), except for the tensor veli palatini, which is innervated by a branch of the mandibular nerve. Normally, the palate elevates evenly in the midline. In a palsy of the vagus nerve, the uvula will deviate away from the affected side.

The palate is supplied by the greater and lesser palatine nerves and the nasopalatine nerve (general sensory fibres carried in all these nerves originate in the pterygopalatine fossa from the maxillary nerve).

Parasympathetic fibres to glands and special afferent fibres carrying taste from the soft palate are carried in the facial nerve and join the nerves in the pterygopalatine fossa, as do the sympathetic fibres, ultimately derived from the T1 spinal cord level.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 40 of 115

Which of the following muscles is NOT involved in depression of the mandible:

a Digastric

b Geniohyoid

c Mylohyoid

d Lateral pterygoid

e Masseter

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 40 of 115

Which of the following muscles is NOT involved in depression of the mandible:

a) **Digastric** ✗
b) Geniohyoid
c) Mylohyoid
d) Lateral pterygoid
e) Masseter ✓

Answer

Depression of the mandible is generated by the digastric, geniohyoid, mylohyoid and lateral pterygoid muscles on both side, assisted by gravity. The lateral pterygoid muscles are also involved as this movement also involves protraction of the mandible. The masseter muscle is a powerful elevator of the mandible.

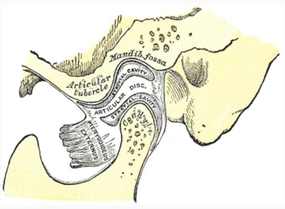
Notes

The temporomandibular joints allow opening and closing of the mouth and complex chewing and side-to-side movements of the lower jaw. Opening of the mouth involves both depression and protrusion of the mandible. Closing of the mouth involves elevation and retraction of the mandible.

Joint	Temporomandibular joint (TMJ)
Articulations	Condylar head of mandible with articular fossa and articular tubercle of squamous part of temporal bone
Stabilising factors	Lateral ligament, sphenomandibular ligament, stylomandibular ligament
Movements	Elevation and depression, retraction and protraction, side to side movements

TMJ joint

Each joint is synovial and formed between the condylar head of the mandible and the articular fossa and articular tubercle of the squamous part of the temporal bone.

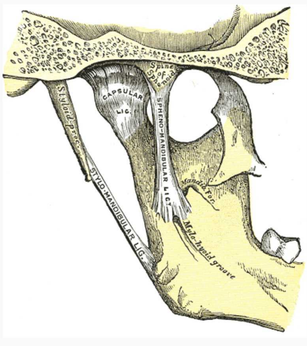


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Ligaments

The joint is stabilised by three extracapsular ligaments:

- the lateral (capsular) ligament extending from the articular tubercles of the temporal bone to the neck of the mandible
- the sphenomandibular ligament extending from the spine of the sphenoid bone at the base of the skull to the medial side of the ramus of the mandible
- the stylomandibular ligament extending from the styloid process of the temporal bone to the posterior margin of the mandible.



Henry Vandyke Carter [Public domain], via Wikimedia Commons

Joint movements

Joint movement	Muscles Involved
Depression	Digastric, geniohyoid, mylohyoid, lateral pterygoid, gravity
Elevation	Temporalis, masseter, medial pterygoid
Protraction	Lateral pterygoid, medial pterygoid
Retraction	Geniohyoid, digastric, temporalis, masseter

Movements of the mandible at the TMJ:

- Depression is generated by the digastric, geniohyoid, mylohyoid and lateral pterygoid muscles assisted by gravity.
- Elevation is generated by the temporalis, masseter and medial pterygoid muscles.
- Protraction is mainly achieved by the lateral pterygoid with some assistance by the medial pterygoid.
- Retraction is carried out by the geniohyoid and digastric muscles and by the posterior and deep fibres of the temporalis and masseter muscles respectively.

Clinical implications

The TMJ is less stable when the mouth is open. Anterior dislocation of the TMJ can occur by yawning or taking a large bite. The head of the mandible slips out of the mandibular fossa and is pulled anteriorly. The patient is unable to close their mouth. Posterior dislocation is uncommon but may occur due to a blow to the face. If traumatic, the facial and auriculotemporal nerves may be affected due to their close proximity to the joint.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 41 of 115

Regarding the external ear, which of the following statements is INCORRECT:

a Sensation from the inferior auricle is mainly carried by the great auricular nerve.

b Sensation from the posterosuperior auricle is mainly carried by the lesser occipital nerve.

c Sensation from the anterosuperior auricle is mainly carried by the auriculotemporal nerve.

d Sensation from the external auditory meatus is mainly carried by the great auricular nerve.

e The umbo of the tympanic membrane is formed by the attachment of the handle of the malleus.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 41 of 115

Regarding the external ear, which of the following statements is INCORRECT:

a) **Sensation from the inferior auricle is mainly carried by the great auricular nerve.** ✖
b) Sensation from the posterosuperior auricle is mainly carried by the lesser occipital nerve.
c) Sensation from the anterosuperior auricle is mainly carried by the auriculotemporal nerve.
d) Sensation from the external auditory meatus is mainly carried by the great auricular nerve. ✔
e) The umbo of the tympanic membrane is formed by the attachment of the handle of the malleus.

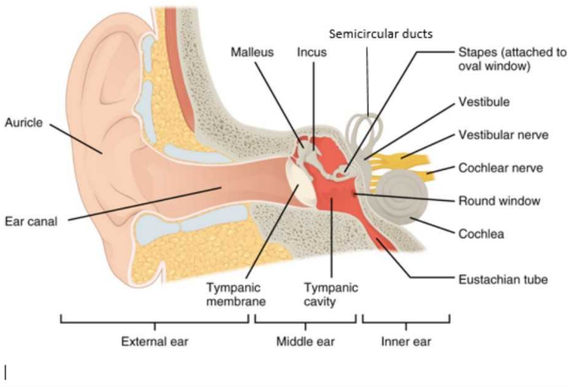
Answer

Sensory innervation of the external acoustic meatus is from the auriculotemporal nerve (branch of the mandibular nerve) anteriorly and superiorly and the auricular branch of the vagus nerve posteriorly and inferiorly.

Notes

The ear is the organ of hearing and balance. It is divided into

- the external ear – consisting of the auricle (pinna) and the external acoustic meatus
- the middle ear – a cavity in the petrous part of the temporal bone bounded laterally by the tympanic membrane and medially by the lateral wall of the internal ear
- the internal ear – a series of cavities within the petrous part of the temporal bone bounded laterally by the middle ear and medially by the internal acoustic meatus



By OpenStax [CC BY 4.0], via Wikimedia Commons

External ear

The auricle (pinna) on the side of the head is a cartilaginous folded structure.

The outer, more superficial structures of the auricle are supplied by the great auricular nerve (from spinal nerves C2 – C3) inferiorly, the lesser occipital nerve (from spinal nerves C2 – C3) posterosuperiorly and the auriculotemporal (branch of the mandibular nerve) anterosuperiorly. The deeper parts of the auricle are supplied by the auricular branch of the vagus nerve and a branch from the facial nerve (which contributes to the auricular branch of the vagus nerve).

The external acoustic meatus extends laterally from the deepest part of the concha to the tympanic membrane (about 3 cm in length). Sensory innervation of the external acoustic meatus is from the auriculotemporal nerve (branch of the mandibular nerve) anteriorly and superiorly and the auricular branch of the vagus nerve posteriorly and inferiorly.

The tympanic membrane separates the external acoustic meatus from the middle ear. At the periphery of the tympanic membrane, a fibrocartilaginous ring attaches it to the tympanic part of the temporal bone. At its centre, the lower end of the handle of the malleus is attached on its internal surface forming the umbo of the tympanic membrane.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 42 of 115



The palatoglossus muscle of the tongue is innervated by which of the following nerves:

a Facial nerve

b Hypoglossal nerve

c Vagus nerve

d Glossopharyngeal nerve

e Mandibular nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 42 of 115

The palatoglossus muscle of the tongue is innervated by which of the following nerves:

a) Facial nerve
b) **Hypoglossal nerve** ✗
c) Vagus nerve ✓
d) Glossopharyngeal nerve
e) Mandibular nerve

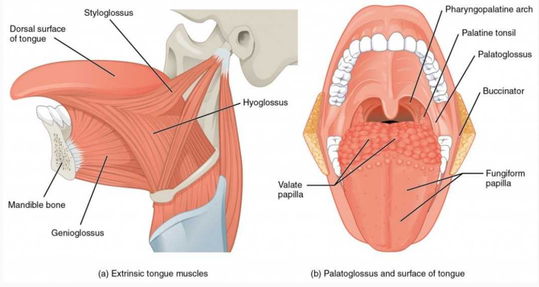
Answer

The palatoglossus muscle is innervated by the vagus nerve.

Notes

The tongue is a muscular structure that forms part of the floor of the oral cavity and part of the anterior wall of the oropharynx. The anterior two-thirds of the tongue are in the oral cavity. The posterior root of the tongue is attached to the mandible and the hyoid bone. The anterior wall of the oropharynx inferior to the oropharyngeal isthmus is formed by the upper part of the posterior one-third of the tongue.

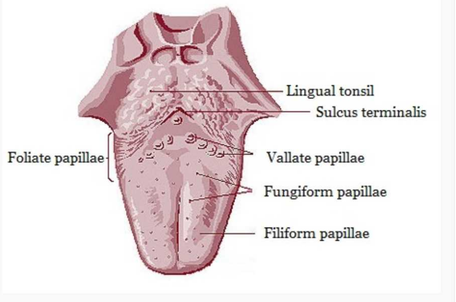
A pair of mucosal pouches (valleculae), one on each side of the midline, between the base of the tongue and epiglottis, are depressions formed between the midline mucosal fold and two lateral folds that connect the tongue to the epiglottis.



By OpenStax [CC BY 4.0], via Wikimedia Commons

Papillae and lingual tonsil

The oral (anterior two-thirds) and pharyngeal (posterior one-third) surfaces are separated by a V-shaped terminal sulcus of the tongue. The superior surface of the oral part of the tongue is covered by papillae, the majority of which have tastebuds on their surface. The mucosa of the pharyngeal surface of the tongue is irregular, because of the many small nodules of lymphoid tissue in the submucosa, collectively known as the lingual tonsil.



By Lesion (Own work) [CC BY-SA 3.0], via Wikimedia Commons

Nerve supply

- Sensation from the anterior two-thirds of the tongue is carried by the lingual nerve, branch of the mandibular nerve.
- Taste from the anterior two-thirds of the tongue is carried by the chorda tympani, branch of the facial nerve.
- Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.
- All muscles of the tongue are innervated by the hypoglossal nerve, except for the palatoglossus, which is innervated by the vagus nerve.

Lymphatics

All lymphatics from the tongue ultimately drain into the deep cervical chain of nodes along the internal jugular vein. The pharyngeal part of the tongue drains through the pharyngeal wall directly into mainly the jugulo-omohyoid node of the deep cervical chain. The oral part of the tongue drains both directly into the deep cervical nodes and indirectly into these nodes by passing first through the mylohyoid muscle and into submental and submandibular nodes.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 43 of 115

Which of the following paranasal sinuses is the last to develop:

a Maxillary

b Frontal

c Ethmoidal

d Sphenoidal

e Frontal and ethmoidal

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 43 of 115

Which of the following paranasal sinuses is the last to develop:

a) Maxillary ✗
b) Frontal ✓
c) Ethmoidal
d) Sphenoidal
e) Frontal and ethmoidal

Answer

The frontal sinus is the last to develop.

Notes

There are four paired paranasal air sinuses – the ethmoidal cells and the sphenoidal, maxillary and frontal sinuses – named according to the bone in which the sinus is found.

The paranasal sinuses develop as outgrowths from the nasal cavities and erode into the surrounding bones.

All of the paranasal sinuses are lined by respiratory mucosa, open into the nasal cavities and are innervated by branches of the trigeminal nerve.

- The frontal sinuses are the most superior of the sinuses and drain onto the middle meatus of the lateral wall.
- The maxillary sinuses are the largest of the paranasal sinuses and drain onto the middle meatus of the lateral wall.
- The ethmoidal cells drain into the superior or middle meatus.
- The sphenoidal sinuses open into the sphenoethmoidal recess of the nasal cavity.

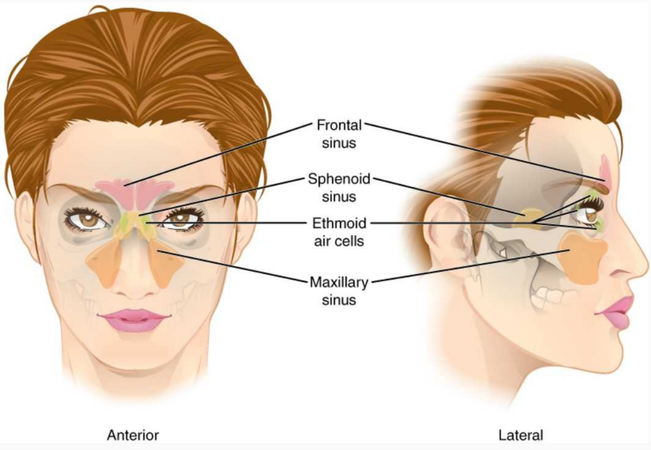
Developmental staging

The maxillary sinus is the first sinus to develop and is filled with fluid at birth and undergoes two phases of growth during years 0 – 3 and again at 6 – 12 years.

The frontal sinus is the last sinus to pneumatise; it is formed by the upward movement of anterior ethmoid cells after age 2, growth increases at age 6 and continues until late teenage years.

The sphenoid sinus starts to pneumatise at around 2 years of age and reaches its full size by the late teenage years.

The ethmoid sinuses are present at birth and develop rapidly, continuing to grow and pneumatise until the age of 12.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 44 of 115

A 29 year old woman presents to ED with a head injury following a climbing accident. Imaging shows that she has fractured the optic canal. Which of the following structures are most likely injured:

a Optic nerve and superior ophthalmic vein

b Optic nerve and ophthalmic nerve

c Oculomotor, trochlear and abducens nerve

d Superior and inferior ophthalmic vein

e Optic nerve and ophthalmic artery

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 44 of 115

A 29 year old woman presents to ED with a head injury following a climbing accident. Imaging shows that she has fractured the optic canal. Which of the following structures are most likely injured:

a) **Optic nerve and superior ophthalmic vein** ✖
b) Optic nerve and ophthalmic nerve
c) Oculomotor, trochlear and abducens nerve
d) Superior and inferior ophthalmic vein
e) Optic nerve and ophthalmic artery ✔

Answer

The optic nerve and the ophthalmic artery enter the orbit through the optic canal. The trochlear, oculomotor, abducens and ophthalmic nerves and the superior ophthalmic vein enter the orbit through the superior orbital fissure. The inferior ophthalmic vein enters the orbit through the inferior orbital fissure.

Notes

The bony orbit is formed from seven bones; the maxilla, zygomatic, frontal, ethmoid, lacrimal, sphenoid, and palatine bones.

Together they give the bony orbit the shape of a pyramid, with its apex extending in a posteromedial direction to become the optic foramen and the wide base extending anteriorly onto the face as the orbital rim.

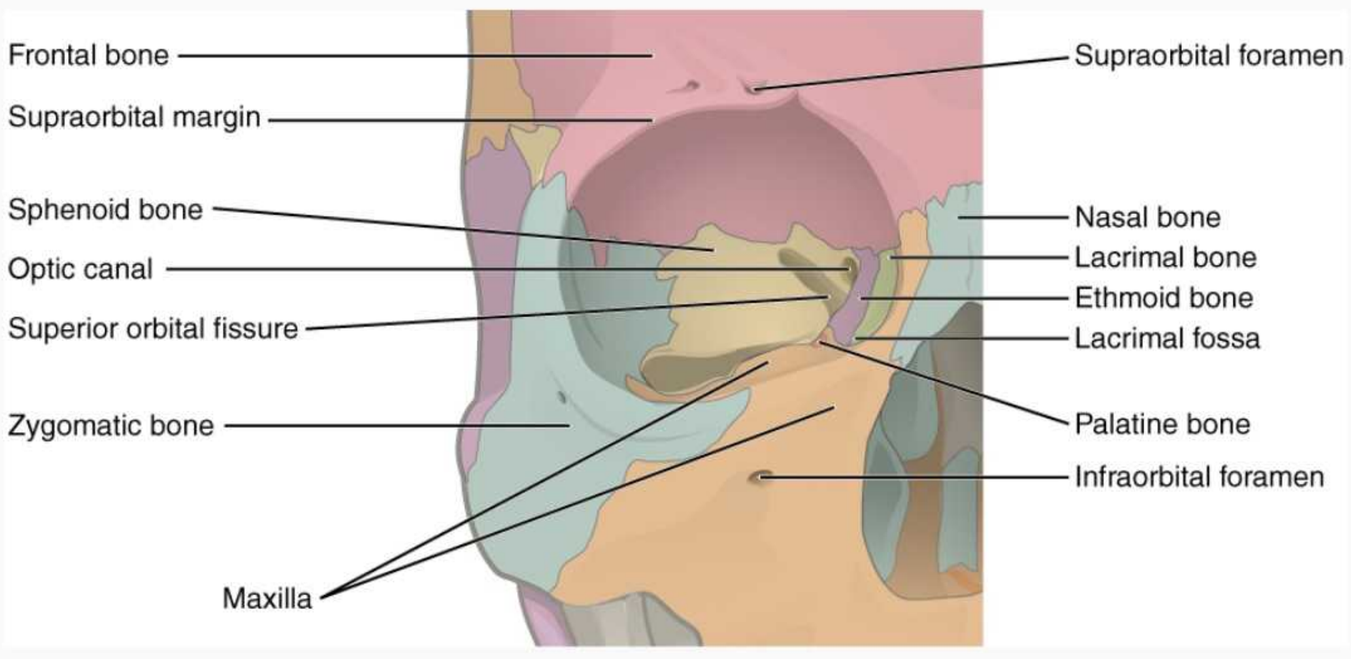
The orbital rim is formed

- superiorly by the frontal bone
- medially by the frontal process of the maxilla
- inferiorly by the zygomatic process of the maxilla and the zygomatic bone
- laterally by the zygomatic bone, the frontal process of the zygomatic bone and the zygomatic process of the frontal bone.

The optic nerve and the ophthalmic artery enter the orbit through the optic canal.

The trochlear, oculomotor, abducens and ophthalmic nerves and the superior ophthalmic vein enter the orbit through the superior orbital fissure.

The inferior ophthalmic vein enters the orbit through the inferior orbital fissure.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 45 of 115



A 45 year old man presents to ED with Hutchinson's sign; a vesicular rash on the tip of the nose. You are concerned about the possibility of ophthalmic involvement. Which of the following nerves is most likely affected:

a Facial

b Trigeminal

c Hypoglossal

d Glossopharyngeal

e Vagus

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 45 of 115

A 45 year old man presents to ED with Hutchinson's sign; a vesicular rash on the tip of the nose. You are concerned about the possibility of ophthalmic involvement. Which of the following nerves is most likely affected:

a) Facial ✗
b) Trigeminal ✓
c) Hypoglossal
d) Glossopharyngeal
e) Vagus

Answer

Shingles is caused by the varicella zoster virus. Primary infection usually occurs in childhood, producing chickenpox. After this, the virus lies dormant in the sensory nervous system, where it can later reactivate causing shingles. If the tip of the nose has a rash, the nasociliary branch of the trigeminal nerve is involved. This branch supplies the globe and so it is very likely that the eye will be affected.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

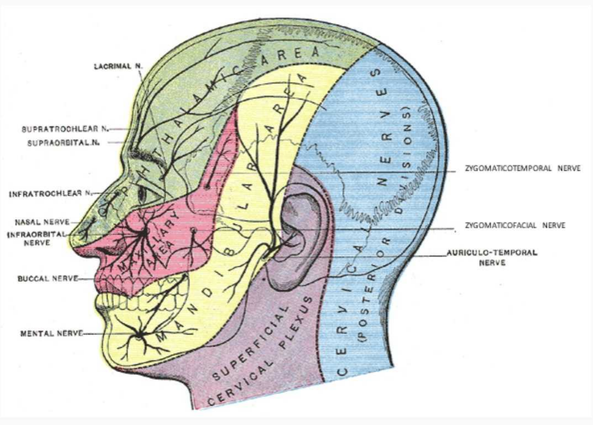
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 46 of 115

Protraction of the mandible is produced primarily by which of the following muscles:

a Digastric

b Geniohyoid

c Mylohyoid

d Lateral pterygoid

e Masseter

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 46 of 115

Protraction of the mandible is produced primarily by which of the following muscles:

a) Digastric ✖
b) Geniohyoid
c) Mylohyoid
d) Lateral pterygoid ✔
e) Masseter

Answer

Protraction is mainly achieved by the lateral pterygoid with some assistance by the medial pterygoid.

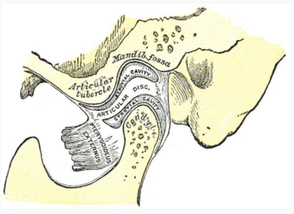
Notes

The temporomandibular joints allow opening and closing of the mouth and complex chewing and side-to-side movements of the lower jaw. Opening of the mouth involves both depression and protrusion of the mandible. Closing of the mouth involves elevation and retraction of the mandible.

Joint	Temporomandibular joint (TMJ)
Articulations	Condylar head of mandible with articular fossa and articular tubercle of squamous part of temporal bone
Stabilising factors	Lateral ligament, sphenomandibular ligament, stylomandibular ligament
Movements	Elevation and depression, retraction and protraction, side to side movements

TMJ joint

Each joint is synovial and formed between the condylar head of the mandible and the articular fossa and articular tubercle of the squamous part of the temporal bone.

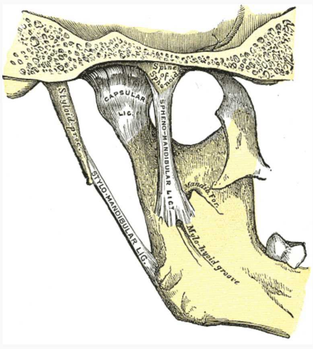


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Ligaments

The joint is stabilised by three extracapsular ligaments:

- the lateral (capsular) ligament extending from the articular tubercles of the temporal bone to the neck of the mandible
- the sphenomandibular ligament extending from the spine of the sphenoid bone at the base of the skull to the medial side of the ramus of the mandible
- the stylomandibular ligament extending from the styloid process of the temporal bone to the posterior margin of the mandible.



Henry Vandyke Carter [Public domain], via Wikimedia Commons

Joint movements

Joint movement	Muscles Involved
Depression	Digastric, geniohyoid, mylohyoid, lateral pterygoid gravity
Elevation	Temporalis, masseter, medial pterygoid
Protraction	Lateral pterygoid, medial pterygoid
Retraction	Geniohyoid, digastric, temporalis, masseter

Movements of the mandible at the TMJ:

- Depression is generated by the digastric, geniohyoid, mylohyoid and lateral pterygoid muscles assisted by gravity.
- Elevation is generated by the temporalis, masseter and medial pterygoid muscles.
- Protraction is mainly achieved by the lateral pterygoid with some assistance by the medial pterygoid.
- Retraction is carried out by the geniohyoid and digastric muscles and by the posterior and deep fibres of the temporalis and masseter muscles respectively.

Clinical implications

The TMJ is less stable when the mouth is open. Anterior dislocation of the TMJ can occur by yawning or taking a large bite. The head of the mandible slips out of the mandibular fossa and is pulled anteriorly. The patient is unable to close their mouth. Posterior dislocation is uncommon but may occur due to a blow to the face. If traumatic, the facial and auriculotemporal nerves may be affected due to their close proximity to the joint.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 47 of 115

The superior rectus muscle acts to produce which of the following eyeball movements:

a Elevation and extorsion

b Elevation and abduction

c Elevation and adduction

d Elevation, adduction and intorsion

e Elevation, adduction and extorsion

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 47 of 115

The superior rectus muscle acts to produce which of the following eyeball movements:

a Elevation and extorsion

b Elevation and abduction

c Elevation and adduction

d Elevation, adduction and intorsion

e Elevation, adduction and extorsion

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 47 of 115

The superior rectus muscle acts to produce which of the following eyeball movements:

a) **Elevation and extorsion** ✖
b) Elevation and abduction
c) Elevation and adduction
d) Elevation, adduction and intorsion ✔
e) Elevation, adduction and extorsion

Answer

The superior rectus muscle acts to elevate, adduct and medially rotate (intort) the eyeball.

Notes

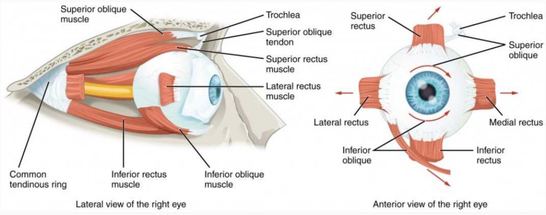
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 48 of 115

Which of the following best describe the territory of the lymphatic drainage of the pre-auricular and parotid lymph nodes:

a Most of external nose

b Eyelids and lateral cheek

c Lateral upper lip and medial cheek

d Medial lower lip and chin

e Upper and lower lip

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 48 of 115

Which of the following best describe the territory of the lymphatic drainage of the pre-auricular and parotid lymph nodes:

a) Most of external nose ✗
b) Eyelids and lateral cheek ✓
c) Lateral upper lip and medial cheek
d) Medial lower lip and chin
e) Upper and lower lip

Answer

The preauricular and parotid nodes, anterior to the ear, drain lymphatics from most of the eyelids, a part of the external nose and the lateral part of the cheek.

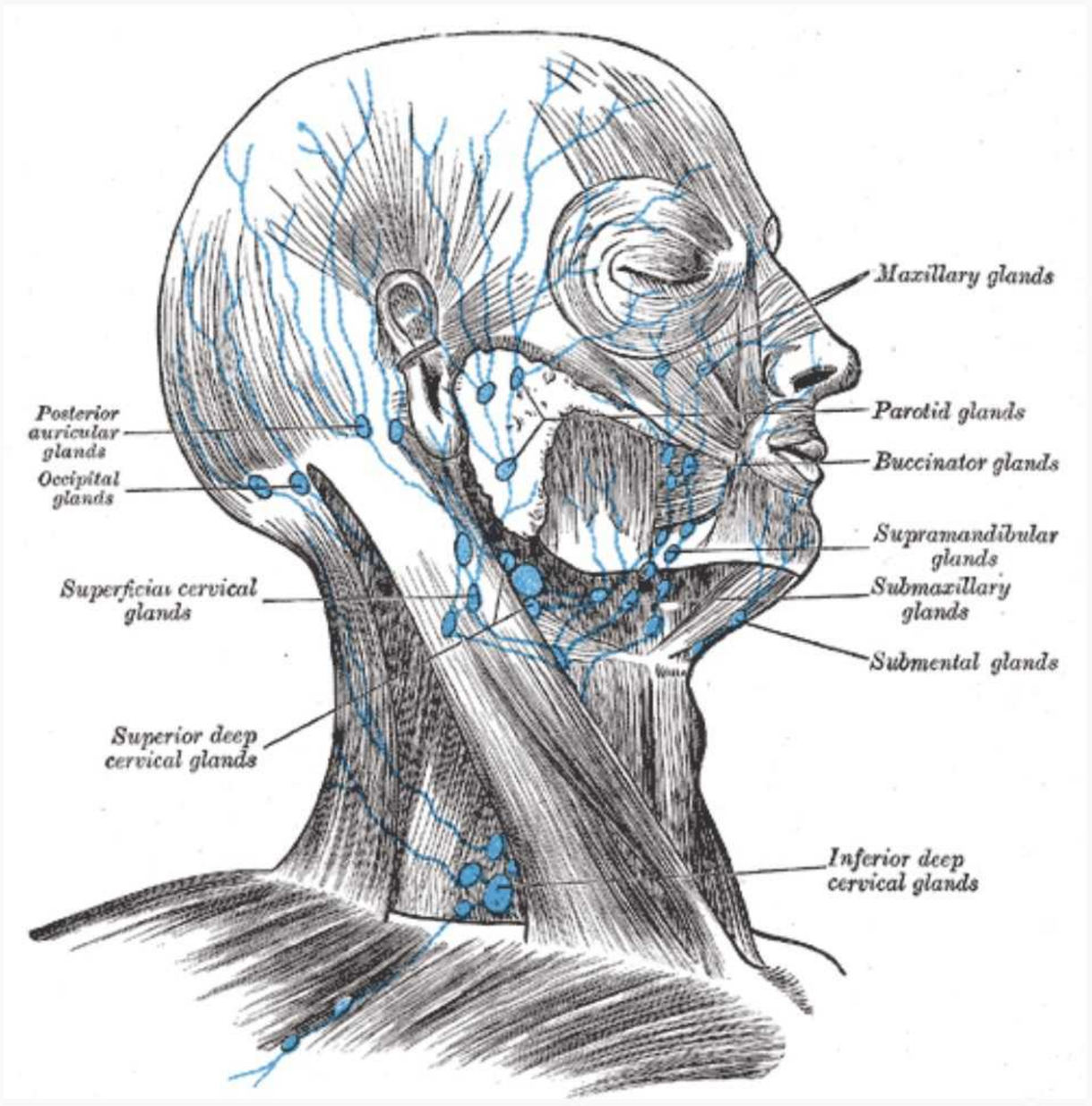
Notes

Lymphatic drainage of the face primarily moves towards three groups of lymph nodes.

Submental nodes, inferior and posterior to the chin, drain lymphatics from the medial part of the lower lip and chin bilaterally (in addition to the tip of the tongue).

Submandibular nodes, superficial to the submandibular gland and inferior to the body of the mandible, drain lymphatics from the medial corner of the orbit, most of the external nose, the medial part of the cheek, the upper lip and the lateral part of the lower lip.

The preauricular and parotid nodes, anterior to the ear, drain lymphatics from most of the eyelids, a part of the external nose and the lateral part of the cheek (in addition to the external acoustic meatus and the posterior orbit).



Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 49 of 115

The orbicularis oris muscle is responsible for which of the following:

a Opening the mouth

b Closing the eyes

c Baring teeth

d Pursing the lips

e Blowing the cheeks out

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 49 of 115

The orbicularis oris muscle is responsible for which of the following:

a) **Opening the mouth** ✗
b) Closing the eyes
c) Baring teeth
d) Pursing the lips ✓
e) Blowing the cheeks out

Answer

The orbicularis oris muscle acts to close and purse the lips.

Notes

The facial muscles act as muscles of facial expression, and as sphincters and dilators of the orifices of the face.

The facial muscles are all innervated by the facial nerve (CN VII).

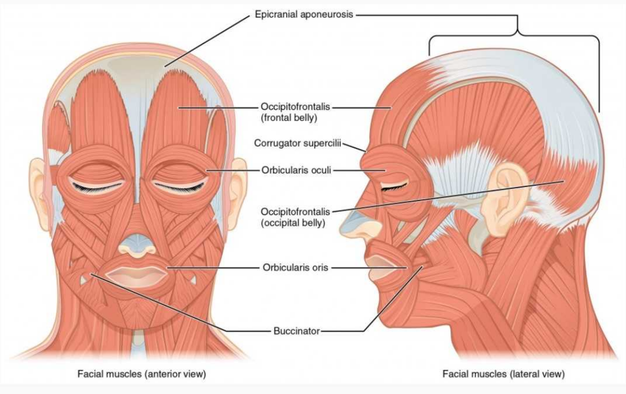
Muscle	Action
Orbicularis oculi	Closes eyelids gentle and forcefully
Occipitofrontalis	Raises eyebrows and wrinkles forehead
Orbicularis oris	Closes lips and protrudes lips as in whistling
Buccinator	Presses cheek against teeth, aids in forceful expulsion of air from distended cheeks

The orbicularis oculi is a large muscle located over the frontal and zygomatic bones and is responsible for closure of the eyelids, both gently (palpebral part) and forcefully as in screwing the eyes up (orbital part).

The occipitofrontalis is responsible for wrinkling the forehead, raising the eyebrows and drawing the scalp backwards. It has two bellies, the occipital belly originating from the superior nuchal line of the occipital bone and mastoid process of the temporal bone, and the frontal belly originating from the skin of the eyebrows; both heads insert onto the epicranial aponeurosis.

The orbicularis oris is a complex muscle consisting of fibres that completely encircle the mouth, responsible for closing the lips and protruding the lips (as in whistling).

The buccinator originates from the posterior parts of the maxilla and mandible, deep to the other facial muscles. Its muscle fibres run forwards to blend with those of the orbicularis oris muscle and to insert into the modiolus, which is a small button-shaped nodule of connective tissue at the interface between the muscles of the lips and cheeks on each side. The buccinator is responsible for pressing the cheek against the teeth which helps keeps the cheek taut and aids in mastication by preventing food from accumulating between the teeth and cheek. The muscle also assists in the forceful expulsion of air from the cheeks by compressing the distended cheeks.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 50 of 115

Regarding the eyelids, which of the following statements is INCORRECT:

a The orbital septum is an extension of periosteum which projects into the eyelid.

b The conjunctiva covers the posterior surface of each eyelid before reflecting onto the sclera of the eyeball.

c The orbicularis oculi is responsible for closing the eyelids.

d Loss of sympathetic innervation to the superior tarsal muscle will cause a complete ptosis.

e The levator palpebrae superioris is innervated by the oculomotor nerve.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 50 of 115

Regarding the eyelids, which of the following statements is INCORRECT:

a) **The orbital septum is an extension of periosteum which projects into the eyelid.** ✖

b)
The conjunctiva covers the posterior surface of each eyelid before reflecting onto the sclera of the eyeball.

c) The orbicularis oculi is responsible for closing the eyelids.

d) Loss of sympathetic innervation to the superior tarsal muscle will cause a complete ptosis. ✔

e) The levator palpebrae superioris is innervated by the oculomotor nerve.

Answer

Loss of sympathetic innervation to the superior tarsal muscle will cause a constant partial ptosis – loss of oculomotor innervation to the levator palpebrae superioris will cause a complete ptosis.

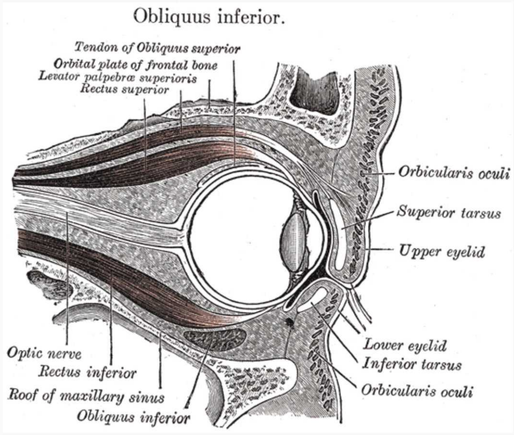
Notes

The upper and lower eyelids are anterior structures that protect the eyeball when closed. The space between the eyelids is the palpebral fissure.

The layers of the eyelids consist of (from anterior to posterior)

- skin
- subcutaneous tissue
- voluntary muscle
- the orbital septum (an extension of periosteum which attaches to the tarsus)
- the tarsus (a plate of dense connective tissue which provide the major support for the eyelid)
- conjunctiva (a thin membrane, composed primarily of stratified squamous epithelium, which covers the posterior surface of each eyelid before reflecting onto the sclera of the eyeball).

The upper and lower eyelids are basically the same, except for the addition of two muscles in the upper eyelid (the levator palpebrae superioris and the superior tarsal muscle).



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Muscles

The orbicularis oculi muscle is innervated by the facial nerve and closes the eyelids. Loss of function of the orbicularis oculi causes an inability to close the eyelids tightly and a drooping of the lower eyelid (ectropion) resulting in spillage of tears. This leads to drying of the cornea, with subsequent ulceration and secondary infection.

The levator palpebrae superioris muscle originates from the roof of the orbit and inserts into the superior tarsus, is innervated by the oculomotor nerve and raises the upper eyelid. The superior tarsal muscle is a collection of smooth muscle fibres in companion with the levator palpebrae superioris, innervated by postganglionic sympathetic fibres from the superior cervical ganglion which helps to maintain upper eyelid opening. Loss of function of the levator palpebrae superioris or the superior tarsal muscle results in a complete or partial ptosis respectively.

Innervation

The sensory innervation of the eyelids and conjunctiva is from:

- the supraorbital nerve (ophthalmic nerve)
- the supratrochlear (ophthalmic nerve)
- the infratrochlear nerve (ophthalmic nerve)
- lacrimal branches (ophthalmic nerve)
- the infraorbital nerve (maxillary nerve).

Glands

Embedded in the tarsal plates are modified sebaceous tarsal glands (Meibomian glands) which empty an oily substance onto the free margin of each eyelid that increases the viscosity of tears and decreases the rate of evaporation of tears from the surface of the eyeball.

Blockage and inflammation of a tarsal gland is a chalazion and is on the inner surface of the eyelid. External sebaceous and sweat glands associated with the eyelash follicles may also become blocked and inflamed causing a stye on the edge of the eyelid.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 51 of 115

The orbicularis oris muscle is innervated by which of the following nerves:

a Facial nerve

b Vagus nerve

c Maxillary division of trigeminal nerve

d Mandibular division of trigeminal nerve

e Glossopharyngeal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 51 of 115

The orbicularis oris muscle is innervated by which of the following nerves:

a) **Facial nerve** ✔
b) Vagus nerve
c) Maxillary division of trigeminal nerve
d) Mandibular division of trigeminal nerve
e) Glossopharyngeal nerve

Answer

The orbicularis oris muscle is innervated by the facial nerve.

Notes

The facial muscles act as muscles of facial expression, and as sphincters and dilators of the orifices of the face.

The facial muscles are all innervated by the facial nerve (CN VII).

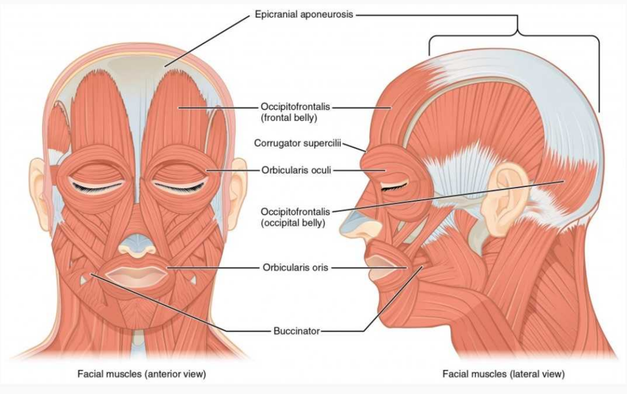
Muscle	Action
Orbicularis oculi	Closes eyelids gentle and forcefully
Occipitofrontalis	Raises eyebrows and wrinkles forehead
Orbicularis oris	Closes lips and protrudes lips as in whistling
Buccinator	Presses cheek against teeth, aids in forceful expulsion of air from distended cheeks

The orbicularis oculi is a large muscle located over the frontal and zygomatic bones and is responsible for closure of the eyelids, both gently (palpebral part) and forcefully as in screwing the eyes up (orbital part).

The occipitofrontalis is responsible for wrinkling the forehead, raising the eyebrows and drawing the scalp backwards. It has two bellies, the occipital belly originating from the superior nuchal line of the occipital bone and mastoid process of the temporal bone, and the frontal belly originating from the skin of the eyebrows; both heads insert onto the epicranial aponeurosis.

The orbicularis oris is a complex muscle consisting of fibres that completely encircle the mouth, responsible for closing the lips and protruding the lips (as in whistling).

The buccinator originates from the posterior parts of the maxilla and mandible, deep to the other facial muscles. Its muscle fibres run forwards to blend with those of the orbicularis oris muscle and to insert into the modiolus, which is a small button-shaped nodule of connective tissue at the interface between the muscles of the lips and cheeks on each side. The buccinator is responsible for pressing the cheek against the teeth which helps keeps the cheek taut and aids in mastication by preventing food from accumulating between the teeth and cheek. The muscle also assists in the forceful expulsion of air from the cheeks by compressing the distended cheeks.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 52 of 115

The tensor veli palatini muscle is innervated by which of the following nerves:

a Facial nerve

b Mandibular nerve

c Hypoglossal nerve

d Glossopharyngeal nerve

e Vagus nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 52 of 115

The tensor veli palatini muscle is innervated by which of the following nerves:

a) Facial nerve ✗
b) Mandibular nerve ✓
c) Hypoglossal nerve
d) Glossopharyngeal nerve
e) Vagus nerve

Answer

The tensor veli palatini muscle is innervated by a branch of the mandibular nerve.

Notes

The soft palate continues posteriorly from the hard palate and acts as a valve that can be:

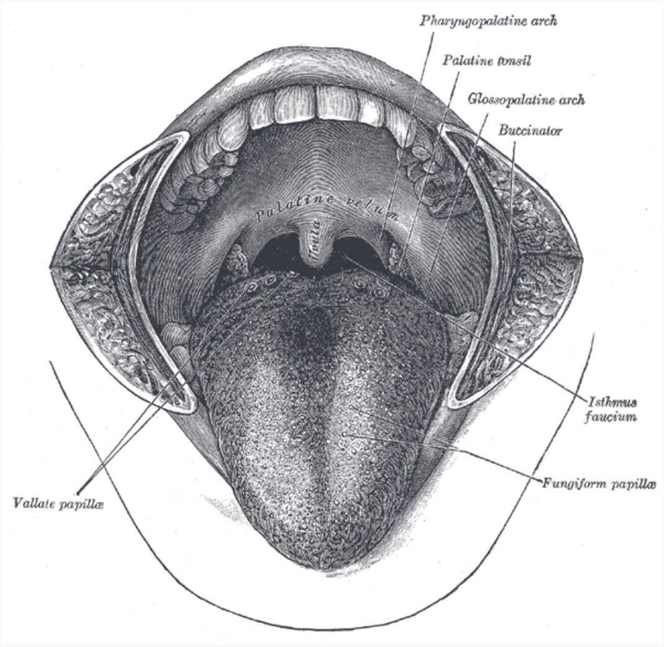
- depressed to help close the oropharyngeal isthmus and seal off the oral cavity from the oropharynx
- elevated to separate the nasopharynx from the oropharynx.

The soft palate is formed and moved by five paired muscles. The small muscular projection that hangs from the posterior free margin of the soft palate is the uvula.

All of the muscles of the soft palate are innervated by the vagus nerve (from the pharyngeal plexus), except for the tensor veli palatini, which is innervated by a branch of the mandibular nerve. Normally, the palate elevates evenly in the midline. In a palsy of the vagus nerve, the uvula will deviate away from the affected side.

The palate is supplied by the greater and lesser palatine nerves and the nasopalatine nerve (general sensory fibres carried in all these nerves originate in the pterygopalatine fossa from the maxillary nerve).

Parasympathetic fibres to glands and special afferent fibres carrying taste from the soft palate are carried in the facial nerve and join the nerves in the pterygopalatine fossa, as do the sympathetic fibres, ultimately derived from the T1 spinal cord level.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 53 of 115

The facial artery arises from which of the following blood vessels:

a Internal carotid artery

b Subclavian artery

c Brachiocephalic trunk

d External carotid artery

e Superficial temporal artery

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 53 of 115

The facial artery arises from which of the following blood vessels:

a) Internal carotid artery ✗
b) Subclavian artery
c) Brachiocephalic trunk
d) External carotid artery ✓
e) Superficial temporal artery

Answer

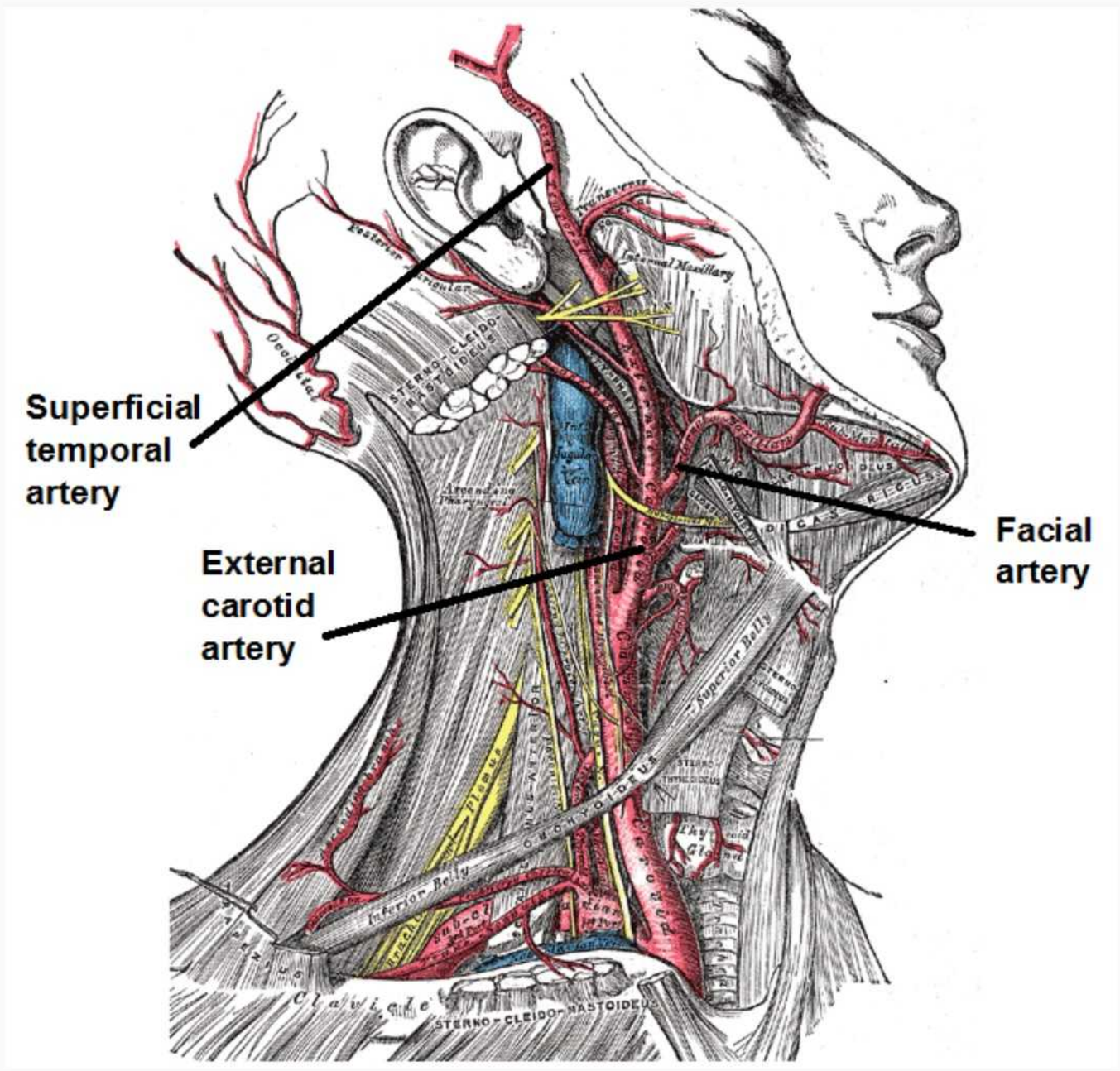
The facial artery is a branch of the external carotid artery.

Notes

The facial artery, branch of the external carotid artery, is the major blood vessel supplying the face.

After arising from the external carotid artery, the facial artery passes up through the deep structures of the neck and appears at the lower border of the mandible after passing posterior to the submandibular gland. Curving around the inferior border of the mandible, just anterior to the masseter muscle, the facial artery then enters the face where it runs upwards and medially in a tortuous course. It passes along the side of the nose and terminates as the angular artery at the medial corner of the eye.

Another contributor to the vascular supply of the face is the transverse facial artery, which arises from the superficial temporal artery within the substance of the parotid gland. The superficial temporal artery is the smaller of the two terminal branches of the external carotid artery; it passes superiorly, just anterior to the ear, divides into anterior and posterior branches and supplies almost the entire lateral aspect of the scalp.



Modified by FRCEM Success. Original by Mikael Häggström, used with permission. (Image:External_carotid_a.gif) [Public domain, Public domain or Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 54 of 115

Regarding the parotid glands, which of the following statements is INCORRECT:

a The parotid glands are anterior to and inferior to the lower half of the ear.

b The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth.

c The parotid duct pierces the masseter muscle to enter the oral cavity.

d The parotid gland opens into the oral cavity near the second upper molar tooth.

e The five terminal branches of the facial nerve arise within the parotid gland.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 54 of 115

Regarding the parotid glands, which of the following statements is INCORRECT:

a) The parotid glands are anterior to and inferior to the lower half of the ear. ✗

b)
The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth.

c) The parotid duct pierces the masseter muscle to enter the oral cavity. ✓

d) The parotid gland opens into the oral cavity near the second upper molar tooth.

e) The five terminal branches of the facial nerve arise within the parotid gland.

Answer

The parotid duct pierces the buccinator muscle to enter the oral cavity.

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

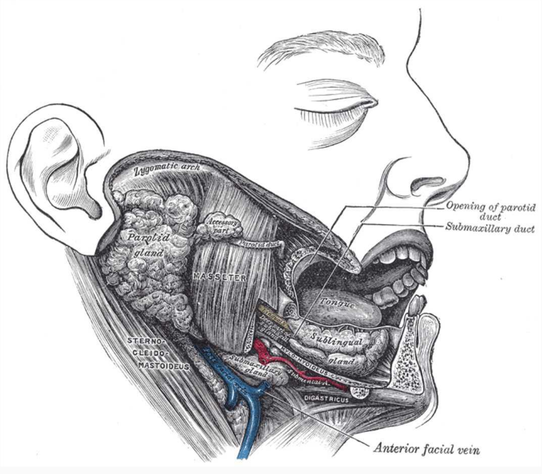
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 55 of 115

The skin over the scalp posterior to the ears and the vertex is supplied by:

a Auriculotemporal nerve

b Cervical spinal nerves C1 – C2

c Cervical spinal nerves C1 – C3

d Cervical spinal nerves C2 – C3

e Cervical spinal nerves C1 – C4

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 55 of 115

The skin over the scalp posterior to the ears and the vertex is supplied by:

a) Auriculotemporal nerve ✗
b) Cervical spinal nerves C1 – C2
c) Cervical spinal nerves C1 – C3
d) Cervical spinal nerves C2 – C3 ✓
e) Cervical spinal nerves C1 – C4

Answer

The skin of the scalp posterior to the ears and vertex is supplied by branches of the cervical nerves from spinal cord levels C2 and C3.

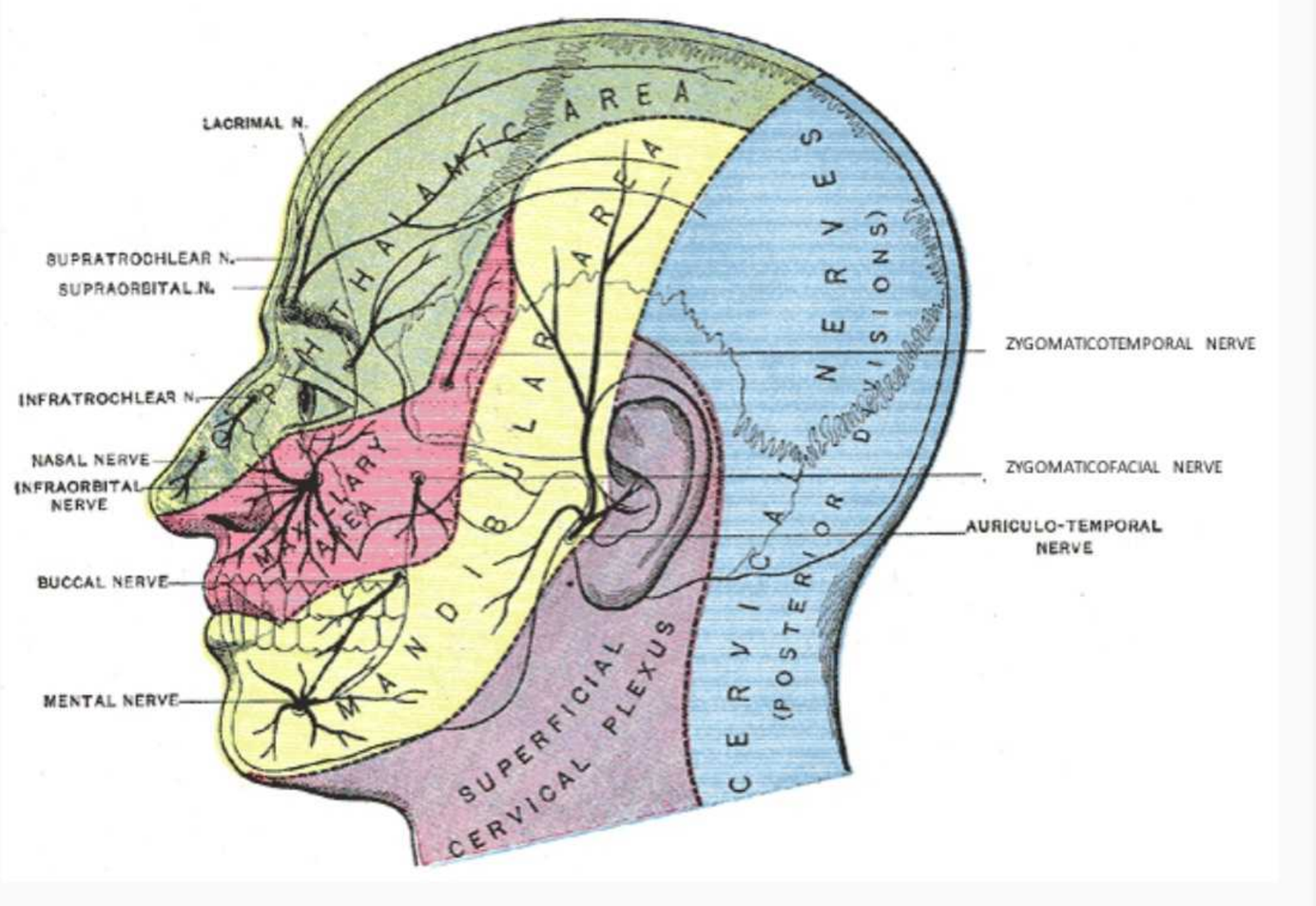
Notes

Anterior to the ears and the vertex the scalp is supplied by branches of the trigeminal nerve:

- The supratrochlear nerve supplies the front of the forehead near the midline
- The supraorbital nerve supplies the forehead as far back as the vertex
- The zygomaticotemporal nerve supplies the scalp over a small anterior area of the temple
- The auriculotemporal nerve supplies the scalp over the temporal region and anterior to the ear extending superiorly near to the vertex.

Posterior to the ears and the vertex the scalp is supplied by cervical spinal nerves C2 and C3:

- The great auricular nerve (anterior rami of C2 – C3, from the cervical plexus) supplies a small area of the scalp just posterior to the ear
- The lesser occipital nerve (anterior ramus of C2, from the cervical plexus) supplies an area of the scalp posterior and superior to the ear
- The greater occipital nerve (posterior ramus of C2) supplies a large part of the posterior scalp as far superiorly as the vertex
- The third occipital nerve (posterior ramus C3) supplies a small area of the lower part of the scalp.



Modified by FRCEM Success.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 56 of 115

Regarding the paranasal sinuses, which of the following statements is INCORRECT:

a The maxillary sinuses drain onto the lateral wall of the middle meatus.

b The ethmoidal cells drain onto the superior or middle meatus.

c The sphenoidal sinuses drains onto the lateral wall of the middle meatus.

d The frontal sinuses drain onto the lateral wall of the middle meatus.

e The frontals sinus is the most superior sinus.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 56 of 115

Regarding the paranasal sinuses, which of the following statements is INCORRECT:

a) **The maxillary sinuses drain onto the lateral wall of the middle meatus.** ✗
b) The ethmoidal cells drain onto the superior or middle meatus.
c) The sphenoidal sinuses drains onto the lateral wall of the middle meatus. ✓
d) The frontal sinuses drain onto the lateral wall of the middle meatus.
e) The frontals sinus is the most superior sinus.

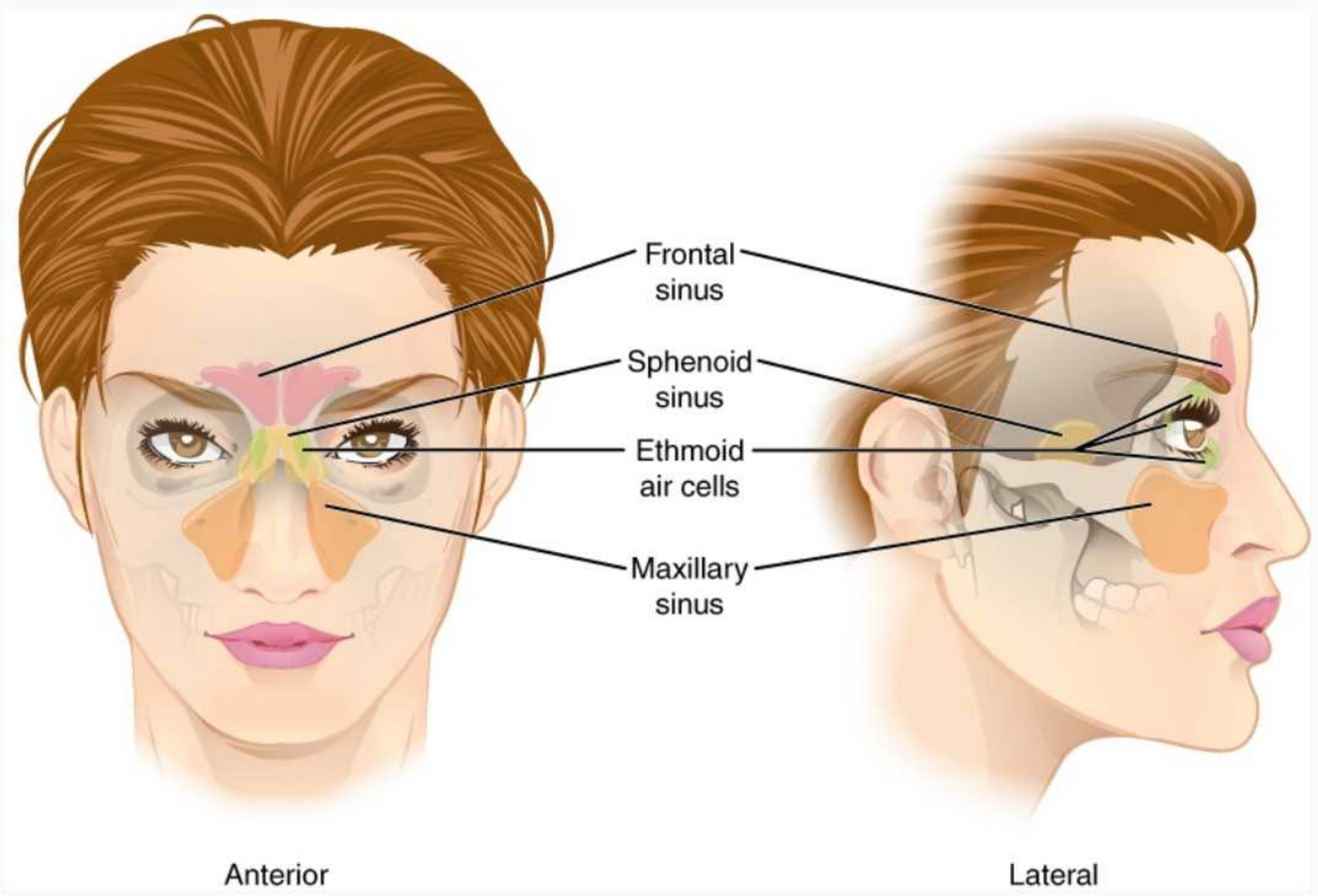
There are four paranasal air sinuses – the ethmoidal cells and the sphenoidal, maxillary and frontal sinuses.

The paranasal sinuses develop as outgrowths from the nasal cavities and erode into the surrounding bones.

All of the paranasal sinuses are lined by respiratory mucosa, open into the nasal cavities and are innervated by branches of the trigeminal nerve.

- The frontal sinuses are the most superior of the sinuses and drain onto the lateral wall of the middle meatus.
- The maxillary sinuses are the largest of the paranasal sinuses and drain onto the lateral wall of the middle meatus.
- The ethmoidal cells drain onto the superior or middle meatus.
- **The sphenoidal sinuses open into the roof of the nasal cavity.**

The maxillary sinus is the first sinus to develop and is filled with fluid at birth and undergoes two phases of growth during years 0 -3 and again at 6 – 12 years. The frontal sinus is the last sinus to pneumatise; it is formed by the upward movement of anterior ethmoid cells after age 2, growth increases at age 6 and continues until late teenage years. The sphenoid sinus starts to pneumatise at around 2 years of age and reaches its full size by the late teenage years. The ethmoid sinuses are present at birth and develop rapidly, continuing to grow and pneumatise until the age of 12.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 57 of 115

The skin of the lower central part of the forehead is primarily supplied by which of the following nerves:

a Supratrochlear nerve

b Supraorbital nerve

c Great auricular nerve

d Zygomaticotemporal nerve

e Zygomaticofacial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 57 of 115

The skin of the lower central part of the forehead is primarily supplied by which of the following nerves:

a) **Supratrochlear nerve** ✔
b) Supraorbital nerve
c) Great auricular nerve
d) Zygomaticotemporal nerve
e) Zygomaticofacial nerve

Answer

The supratrochlear nerve, branch of the ophthalmic nerve, innervates skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

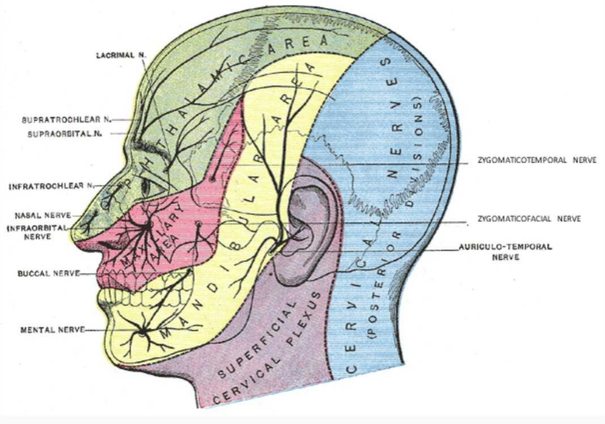
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 58 of 115

The superficial temporal artery is a branch of which of the following blood vessels:

a Internal carotid artery

b Brachiocephalic trunk

c External carotid artery

d Facial artery

e Maxillary artery

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 58 of 115

The superficial temporal artery is a branch of which of the following blood vessels:

a) Internal carotid artery ✗
b) Brachiocephalic trunk
c) External carotid artery ✓
d) Facial artery
e) Maxillary artery

Answer

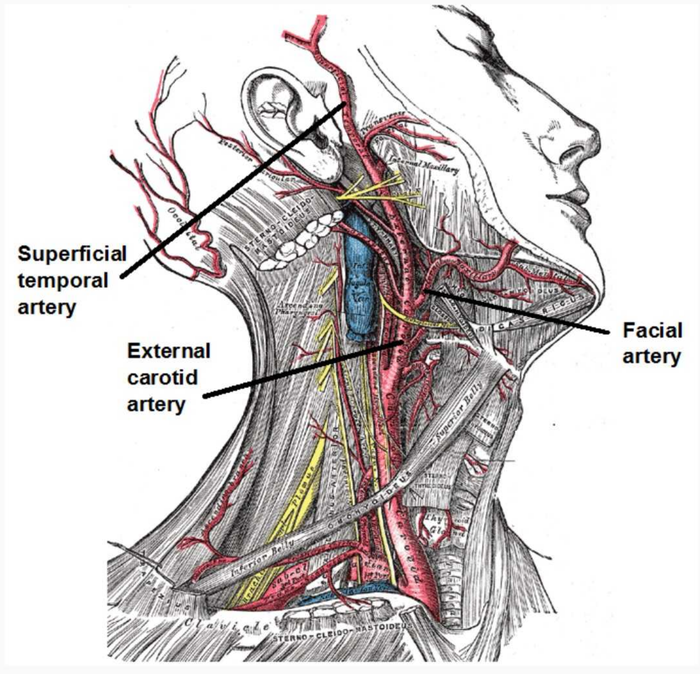
The superficial temporal artery is the smaller of the two terminal branches of the external carotid artery (the larger being the maxillary artery).

Notes

The facial artery, branch of the external carotid artery, is the major blood vessel supplying the face.

After arising from the external carotid artery, the facial artery passes up through the deep structures of the neck and appears at the lower border of the mandible after passing posterior to the submandibular gland. Curving around the inferior border of the mandible, just anterior to the masseter muscle, the facial artery then enters the face where it runs upwards and medially in a tortuous course. It passes along the side of the nose and terminates as the angular artery at the medial corner of the eye.

Another contributor to the vascular supply of the face is the transverse facial artery, which arises from the superficial temporal artery within the substance of the parotid gland. The superficial temporal artery is the smaller of the two terminal branches of the external carotid artery; it passes superiorly, just anterior to the ear, divides into anterior and posterior branches and supplies almost the entire lateral aspect of the scalp.



Modified by FRCEM Success. Original by Mikael Häggström, used with permission. (Image:External_carotid_a.gif) [Public domain, Public domain or Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 59 of 115

Retraction of the mandible is produced by all of the following muscles, EXCEPT for:

a Geniohyoid

b Digastric

c Posterior fibres of the temporalis

d Deep fibres of the masseter

e Lateral pterygoid

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 59 of 115

Retraction of the mandible is produced by all of the following muscles, EXCEPT for:

a) **Geniohyoid** ✗
b) Digastric
c) Posterior fibres of the temporalis
d) Deep fibres of the masseter
e) Lateral pterygoid ✓

Answer

Retraction of the mandible is carried out by the geniohyoid and digastric muscles and by the posterior and deep fibres of the temporalis and masseter muscles respectively. The lateral pterygoid acts to protract the mandible.

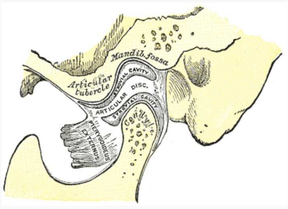
Notes

The temporomandibular joints allow opening and closing of the mouth and complex chewing and side-to-side movements of the lower jaw. Opening of the mouth involves both depression and protrusion of the mandible. Closing of the mouth involves elevation and retraction of the mandible.

Joint	Temporomandibular joint (TMJ)
Articulations	Condylar head of mandible with articular fossa and articular tubercle of squamous part of temporal bone
Stabilising factors	Lateral ligament, sphenomandibular ligament, stylomandibular ligament
Movements	Elevation and depression, retraction and protraction, side to side movements

TMJ joint

Each joint is synovial and formed between the condylar head of the mandible and the articular fossa and articular tubercle of the squamous part of the temporal bone.

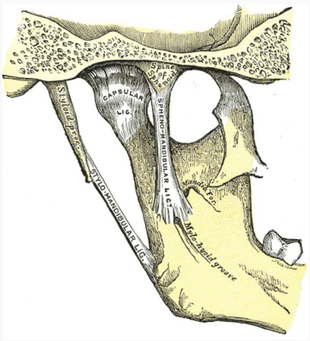


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Ligaments

The joint is stabilised by three extracapsular ligaments:

- the lateral (capsular) ligament extending from the articular tubercles of the temporal bone to the neck of the mandible
- the sphenomandibular ligament extending from the spine of the sphenoid bone at the base of the skull to the medial side of the ramus of the mandible
- the stylomandibular ligament extending from the styloid process of the temporal bone to the posterior margin of the mandible.



Henry Vandyke Carter [Public domain], via Wikimedia Commons

Joint movements

Joint movement	Muscles Involved
Depression	Digastric, geniohyoid, mylohyoid, lateral pterygoid, gravity
Elevation	Temporalis, masseter, medial pterygoid
Protraction	Lateral pterygoid, medial pterygoid
Retraction	Geniohyoid, digastric, temporalis, masseter

Movements of the mandible at the TMJ:

- Depression is generated by the digastric, geniohyoid, mylohyoid and lateral pterygoid muscles assisted by gravity.
- Elevation is generated by the temporalis, masseter and medial pterygoid muscles.
- Protraction is mainly achieved by the lateral pterygoid with some assistance by the medial pterygoid.
- Retraction is carried out by the geniohyoid and digastric muscles and by the posterior and deep fibres of the temporalis and masseter muscles respectively.

Clinical implications

The TMJ is less stable when the mouth is open. Anterior dislocation of the TMJ can occur by yawning or taking a large bite. The head of the mandible slips out of the mandibular fossa and is pulled anteriorly. The patient is unable to close their mouth. Posterior dislocation is uncommon but may occur due to a blow to the face. If traumatic, the facial and auriculotemporal nerves may be affected due to their close proximity to the joint.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 60 of 115

Regarding the bony orbit, which of the following statements is INCORRECT:

a The bony orbit is formed from seven bones.

b The orbital rim is formed superiorly by the frontal bone.

c The orbital rim is formed inferiorly by the maxilla and zygomatic bone.

d The orbital rim is formed medially by the nasal bone.

e The orbital rim is formed laterally by the zygomatic and frontal bone.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 60 of 115

Regarding the bony orbit, which of the following statements is INCORRECT:

a) **The bony orbit is formed from seven bones.** ✗
b) The orbital rim is formed superiorly by the frontal bone.
c) The orbital rim is formed inferiorly by the maxilla and zygomatic bone.
d) The orbital rim is formed medially by the nasal bone. ✓
e) The orbital rim is formed laterally by the zygomatic and frontal bone.

Answer

The orbital rim is formed medially by the frontal process of the maxilla.

Notes

The bony orbit is formed from seven bones; the maxilla, zygomatic, frontal, ethmoid, lacrimal, sphenoid, and palatine bones.

Together they give the bony orbit the shape of a pyramid, with its apex extending in a posteromedial direction to become the optic foramen and the wide base extending anteriorly onto the face as the orbital rim.

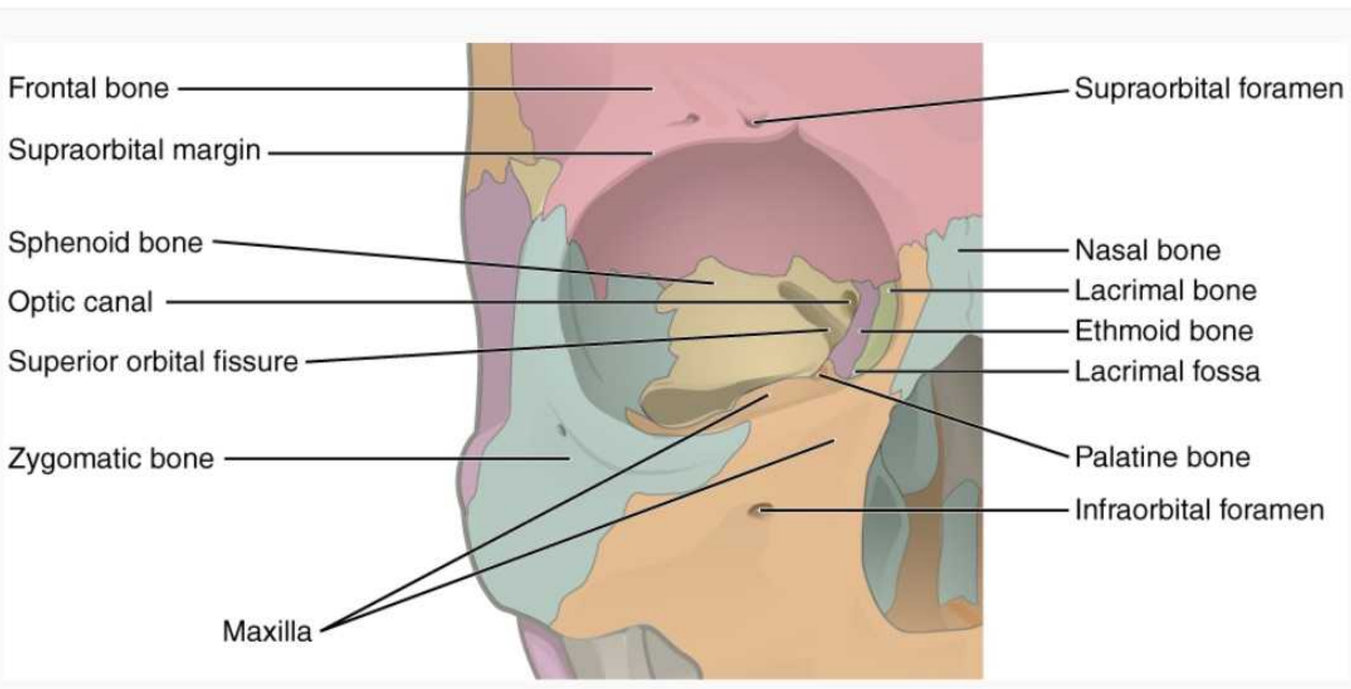
The orbital rim is formed

- superiorly by the frontal bone
- medially by the frontal process of the maxilla
- inferiorly by the zygomatic process of the maxilla and the zygomatic bone
- laterally by the zygomatic bone, the frontal process of the zygomatic bone and the zygomatic process of the frontal bone.

The optic nerve and the ophthalmic artery enter the orbit through the optic canal.

The trochlear, oculomotor, abducens and ophthalmic nerves and the superior ophthalmic vein enter the orbit through the superior orbital fissure.

The inferior ophthalmic vein enters the orbit through the inferior orbital fissure.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 61 of 115

The orbicularis oculi muscle is responsible for which of the following:

a Accommodation of the lens

b Pupillary constriction

c Intorsion of the eyeball

d Closure of the eyelids

e Opening of the eyelids

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 61 of 115

The orbicularis oculi muscle is responsible for which of the following:

a) **Accommodation of the lens** ✗
b) Pupillary constriction
c) Intorsion of the eyeball
d) Closure of the eyelids ✓
e) Opening of the eyelids

Answer

The orbicularis oculi muscle acts to close the eyelids.

Notes

The facial muscles act as muscles of facial expression, and as sphincters and dilators of the orifices of the face.

The facial muscles are all innervated by the facial nerve (CN VII).

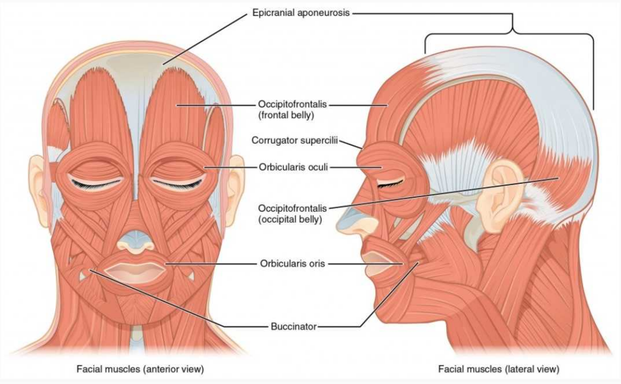
Muscle	Action
Orbicularis oculi	Closes eyelids gentle and forcefully
Occipitofrontalis	Raises eyebrows and wrinkles forehead
Orbicularis oris	Closes lips and protrudes lips as in whistling
Buccinator	Presses cheek against teeth, aids in forceful expulsion of air from distended cheeks

The orbicularis oculi is a large muscle located over the frontal and zygomatic bones and is responsible for closure of the eyelids, both gently (palpebral part) and forcefully as in screwing the eyes up (orbital part).

The occipitofrontalis is responsible for wrinkling the forehead, raising the eyebrows and drawing the scalp backwards. It has two bellies, the occipital belly originating from the superior nuchal line of the occipital bone and mastoid process of the temporal bone, and the frontal belly originating from the skin of the eyebrows; both heads insert onto the epicranial aponeurosis.

The orbicularis oris is a complex muscle consisting of fibres that completely encircle the mouth, responsible for closing the lips and protruding the lips (as in whistling).

The buccinator originates from the posterior parts of the maxilla and mandible, deep to the other facial muscles. Its muscle fibres run forwards to blend with those of the orbicularis oris muscle and to insert into the modiolus, which is a small button-shaped nodule of connective tissue at the interface between the muscles of the lips and cheeks on each side. The buccinator is responsible for pressing the cheek against the teeth which helps keeps the cheek taut and aids in mastication by preventing food from accumulating between the teeth and cheek. The muscle also assists in the forceful expulsion of air from the cheeks by compressing the distended cheeks.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 62 of 115

Elevation of the mandible is produced primarily by which of the following muscles:

a Temporalis and lateral pterygoid

b Temporalis, masseter and lateral pterygoid

c Temporalis, masseter and medial pterygoid

d Temporalis, geniohyoid and mylohyoid

e Digastric and masseter

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 62 of 115

Elevation of the mandible is produced primarily by which of the following muscles:

a) **Temporalis and lateral pterygoid** ✗
b) Temporalis, masseter and lateral pterygoid
c) Temporalis, masseter and medial pterygoid ✓
d) Temporalis, geniohyoid and mylohyoid
e) Digastric and masseter

Answer

Elevation of the mandible is generated by the temporalis, masseter and medial pterygoid muscles.

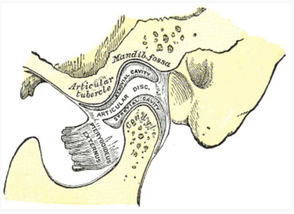
Notes

The temporomandibular joints allow opening and closing of the mouth and complex chewing and side-to-side movements of the lower jaw. Opening of the mouth involves both depression and protrusion of the mandible. Closing of the mouth involves elevation and retraction of the mandible.

Joint	Temporomandibular joint (TMJ)
Articulations	Condylar head of mandible with articular fossa and articular tubercle of squamous part of temporal bone
Stabilising factors	Lateral ligament, sphenomandibular ligament, stylomandibular ligament
Movements	Elevation and depression, retraction and protraction, side to side movements

TMJ joint

Each joint is synovial and formed between the condylar head of the mandible and the articular fossa and articular tubercle of the squamous part of the temporal bone.

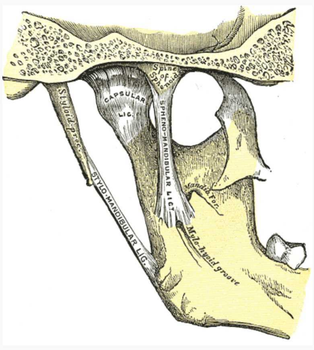


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Ligaments

The joint is stabilised by three extracapsular ligaments:

- the lateral (capsular) ligament extending from the articular tubercles of the temporal bone to the neck of the mandible
- the sphenomandibular ligament extending from the spine of the sphenoid bone at the base of the skull to the medial side of the ramus of the mandible
- the stylomandibular ligament extending from the styloid process of the temporal bone to the posterior margin of the mandible.



Henry Vandyke Carter [Public domain], via Wikimedia Commons

Joint movements

Joint movement	Muscles Involved
Depression	Digastric, geniohyoid, mylohyoid, lateral pterygoid, gravity
Elevation	Temporalis, masseter, medial pterygoid
Protraction	Lateral pterygoid, medial pterygoid
Retraction	Geniohyoid, digastric, temporalis, masseter

Movements of the mandible at the TMJ:

- Depression is generated by the digastric, geniohyoid, mylohyoid and lateral pterygoid muscles assisted by gravity.
- Elevation is generated by the temporalis, masseter and medial pterygoid muscles.
- Protraction is mainly achieved by the lateral pterygoid with some assistance by the medial pterygoid.
- Retraction is carried out by the geniohyoid and digastric muscles and by the posterior and deep fibres of the temporalis and masseter muscles respectively.

Clinical implications

The TMJ is less stable when the mouth is open. Anterior dislocation of the TMJ can occur by yawning or taking a large bite. The head of the mandible slips out of the mandibular fossa and is pulled anteriorly. The patient is unable to close their mouth. Posterior dislocation is uncommon but may occur due to a blow to the face. If traumatic, the facial and auriculotemporal nerves may be affected due to their close proximity to the joint.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 63 of 115



Preganglionic parasympathetic fibres to the parotid gland are carried by which of the following nerves:

a Vagus nerve

b Hypoglossal nerve

c Glossopharyngeal nerve

d Auriculotemporal nerve of the mandibular nerve

e Facial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 63 of 115

Preganglionic parasympathetic fibres to the parotid gland are carried by which of the following nerves:

a) Vagus nerve ✖
b) Hypoglossal nerve
c) Glossopharyngeal nerve ✔
d) Auriculotemporal nerve of the mandibular nerve
e) Facial nerve

Answer

The glossopharyngeal nerve carries preganglionic secretomotor parasympathetic fibres to the parotid gland, which synapse in the otic ganglion. Postganglionic parasympathetic fibres are carried to the parotid gland by the auriculotemporal nerve, branch of the mandibular nerve.

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

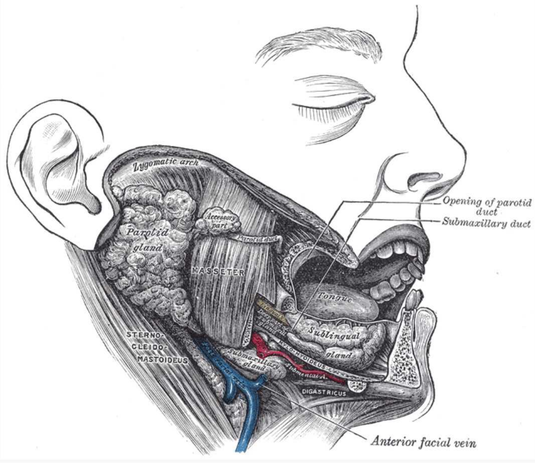
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

Anatomy: Head

Question 64 of 115



A 56 year old diabetic man presents to ED with a fever and a painful swollen eye. You diagnose periorbital cellulitis. What anatomical structure helps prevent spread of infection to the orbit:

a Orbital septum

b Conjunctiva

c Tarsal plate

d Orbicularis oculi

e Meibomian glands

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 64 of 115

A 56 year old diabetic man presents to ED with a fever and a painful swollen eye. You diagnose periorbital cellulitis. What anatomical structure helps prevent spread of infection to the orbit:

a) **Orbital septum** ✔
b) Conjunctiva
c) Tarsal plate
d) Orbicularis oculi
e) Meibomian glands

Answer

The orbital septum is a membranous sheet which acts as the anterior boundary of the orbit. It arises from the periosteum around the orbital margin. Centrally, it fuses into the tarsal plates. It effectively separates the eyelids from the contents of the orbital cavity and provides a barrier against spread of infection between the preseptal space anteriorly (periorbital cellulitis) to postseptal space (orbital cellulitis).

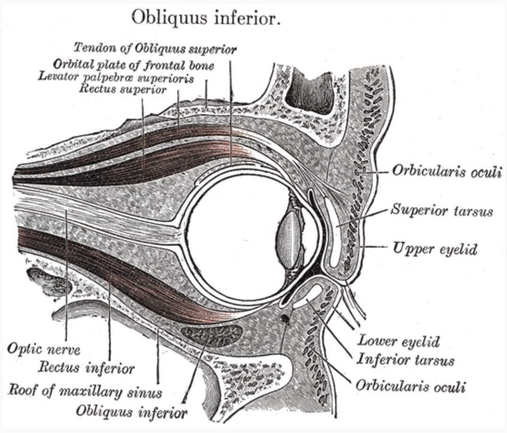
Notes

The upper and lower eyelids are anterior structures that protect the eyeball when closed. The space between the eyelids is the palpebral fissure.

The layers of the eyelids consist of (from anterior to posterior)

- skin
- subcutaneous tissue
- voluntary muscle
- the orbital septum (an extension of periosteum which attaches to the tarsus)
- the tarsus (a plate of dense connective tissue which provide the major support for the eyelid)
- conjunctiva (a thin membrane, composed primarily of stratified squamous epithelium, which covers the posterior surface of each eyelid before reflecting onto the sclera of the eyeball).

The upper and lower eyelids are basically the same, except for the addition of two muscles in the upper eyelid (the levator palpebrae superioris and the superior tarsal muscle).



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Muscles

The orbicularis oculi muscle is innervated by the facial nerve and closes the eyelids. Loss of function of the orbicularis oculi causes an inability to close the eyelids tightly and a drooping of the lower eyelid (ectropion) resulting in spillage of tears. This leads to drying of the cornea, with subsequent ulceration and secondary infection.

The levator palpebrae superioris muscle originates from the roof of the orbit and inserts into the superior tarsus, is innervated by the oculomotor nerve and raises the upper eyelid. The superior tarsal muscle is a collection of smooth muscle fibres in companion with the levator palpebrae superioris, innervated by postganglionic sympathetic fibres from the superior cervical ganglion which helps to maintain upper eyelid opening. Loss of function of the levator palpebrae superioris or the superior tarsal muscle results in a complete or partial ptosis respectively.

Innervation

The sensory innervation of the eyelids and conjunctiva is from:

- the supraorbital nerve (ophthalmic nerve)
- the supratrochlear (ophthalmic nerve)
- the infratrochlear nerve (ophthalmic nerve)
- lacrimal branches (ophthalmic nerve)
- the infraorbital nerve (maxillary nerve).

Glands

Embedded in the tarsal plates are modified sebaceous tarsal glands (Meibomian glands) which empty an oily substance onto the free margin of each eyelid that increases the viscosity of tears and decreases the rate of evaporation of tears from the surface of the eyeball.

Blockage and inflammation of a tarsal gland is a chalazion and is on the inner surface of the eyelid. External sebaceous and sweat glands associated with the eyelash follicles may also become blocked and inflamed causing a stye on the edge of the eyelid.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 65 of 115

The temporalis muscle acts to produce which of the following movements:

a Elevation and retraction of the mandible

b Elevation and protraction of the mandible

c Depression and retraction of the mandible

d Depression and protraction of the mandible

e Retraction and protraction of the mandible

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 65 of 115

The temporalis muscle acts to produce which of the following movements:

a) **Elevation and retraction of the mandible** ✔
b) Elevation and protraction of the mandible
c) Depression and retraction of the mandible
d) Depression and protraction of the mandible
e) Retraction and protraction of the mandible

Answer

The temporalis muscle acts to elevate and retract the mandible.

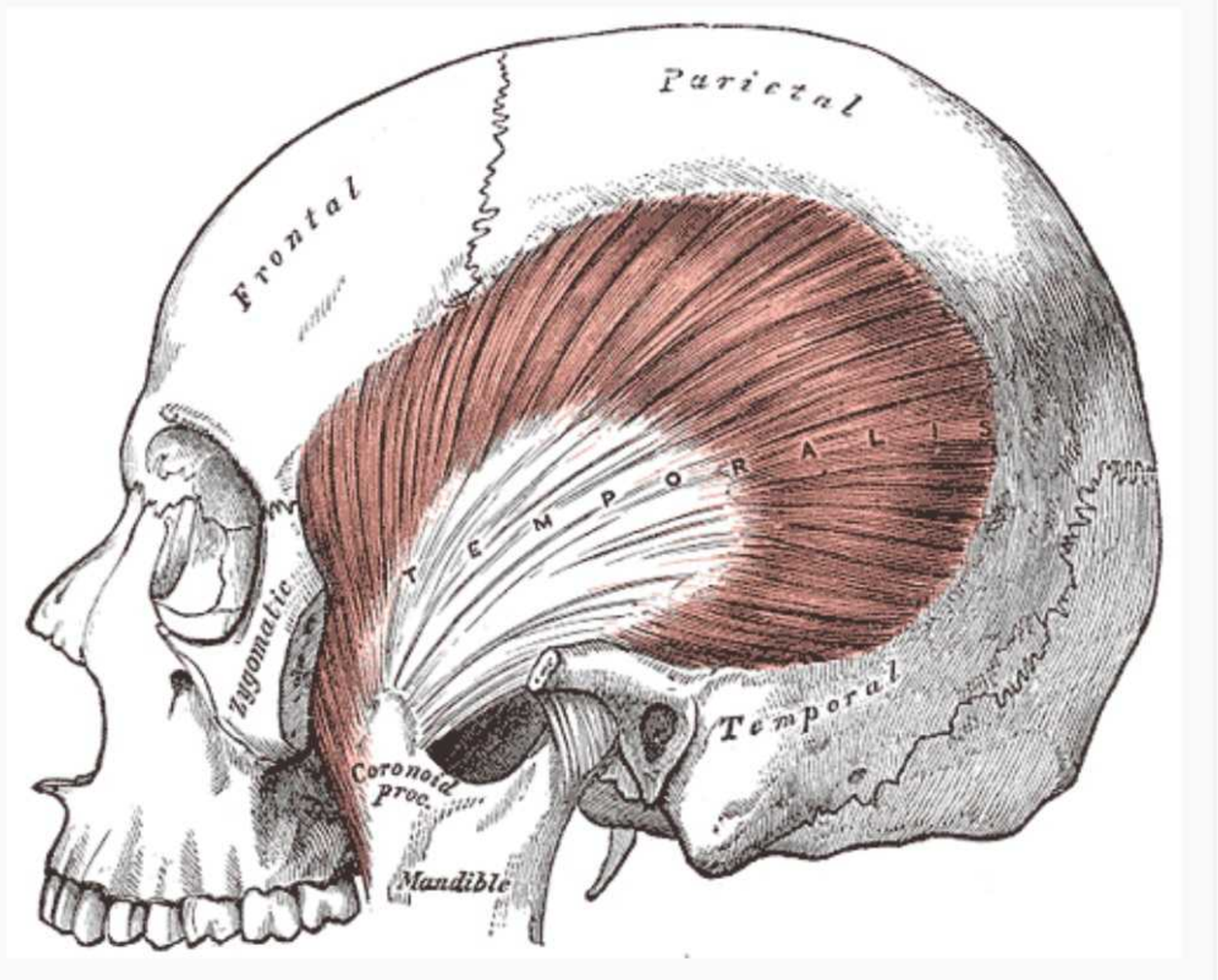
Notes

Muscle	Temporalis
Origin	Bony surface of temporal fossa superior to the inferior temporal line
Insertion	Coronoid process of mandible and along anterior margin of ramus of mandible
Action	Elevation of mandible, retraction of mandible, side-to-side movements of mandible
Innervation	Mandibular division of trigeminal nerve

The temporalis muscle is a large fan-shaped muscle that fills much of the temporal fossa. It originates from the bony surfaces of the temporal fossa superiorly to the inferior temporal line and is attached laterally to the surface of the temporal fascia. Distally it inserts onto the coronoid process of the mandible and along the anterior margin of the ramus of the mandible (almost to the last molar tooth).

The temporalis is a powerful elevator of the mandible, acts to retract the mandible and also participates in side-to-side movements of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 66 of 115



The masseter muscle inserts onto which of the following structures:

a Lateral aspect of mandible

b Maxilla

c Mastoid process

d Clavicle

e Modiolus

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 66 of 115

The masseter muscle inserts onto which of the following structures:

a) Lateral aspect of mandible ✔

b) Maxilla

c) Mastoid process

d) Clavicle

e) Modiolus

Answer

The masseter muscle originates from the zygomatic arch and the maxillary process of the zygomatic bone and inserts onto the lateral surface of the ramus of the mandible.

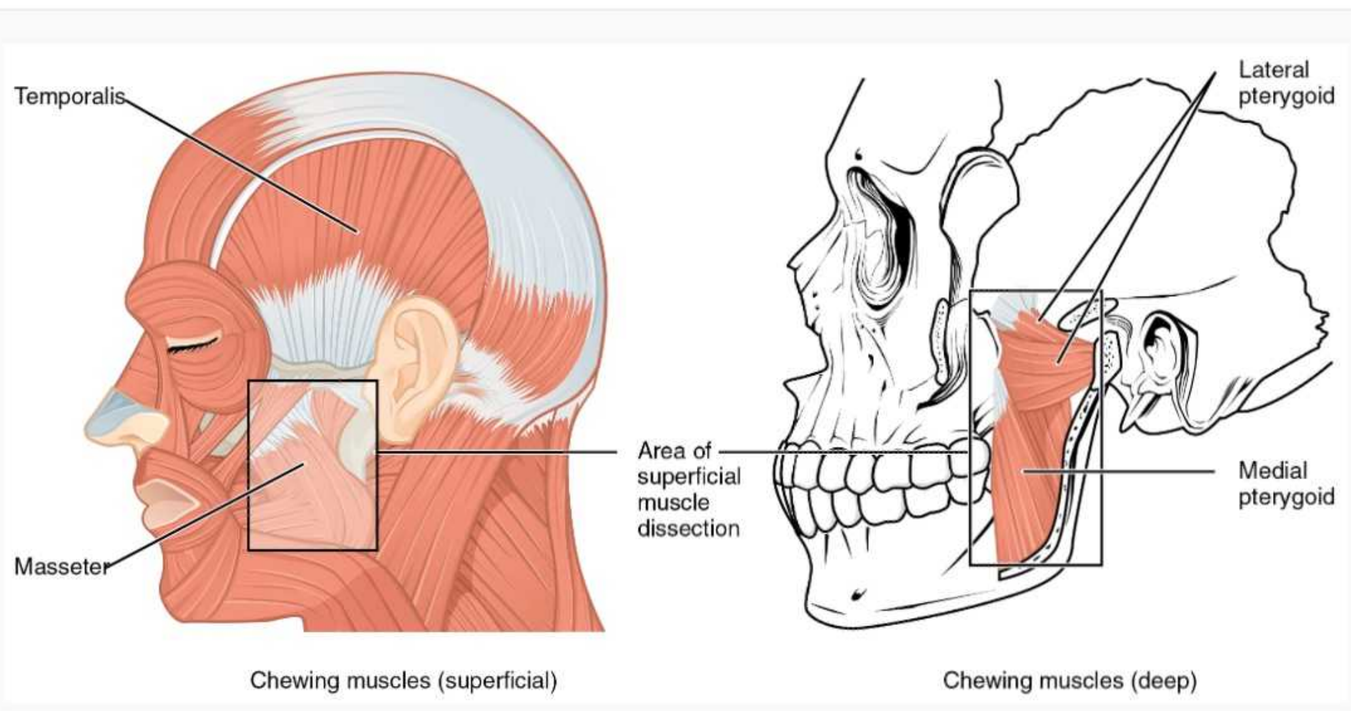
Notes

Muscle	Masseter
Origin	Zygomatic arch and maxillary process of zygomatic bone
Insertion	Lateral surface of ramus of mandible
Action	Elevation of mandible
Innervation	Mandibular division of trigeminal nerve

The masseter muscle is a powerful muscle of mastication that elevates the mandible.

It overlies the lateral surface of the ramus of the mandible. It originates from the zygomatic arch and the maxillary process of the zygomatic bone and inserts onto the lateral surface of the ramus of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

FRCEMSuccess

MENU

Anatomy: Head



Question 67 of 115

Regarding the tongue, which of the following statements is CORRECT:

a The posterior root of the tongue is attached to the mandible and the thyroid cartilage.

b The lingual tonsil is found on the underside of the tongue.

c Tastebuds are predominantly found on the pharyngeal surface of the tongue.

d The lymphatic supply of the tongue drains to the jugulo-omohyoid node of the deep cervical chain.

e Sensation from the tongue is carried by the hypoglossal nerve.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 67 of 115

Regarding the tongue, which of the following statements is CORRECT:

a) ✖
The posterior root of the tongue is attached to the mandible and the thyroid cartilage.

b) The lingual tonsil is found on the underside of the tongue.

c) Tastebuds are predominantly found on the pharyngeal surface of the tongue.

d) ✔
The lymphatic supply of the tongue drains to the jugulo-omohyoid node of the deep cervical chain.

e) Sensation from the tongue is carried by the hypoglossal nerve.

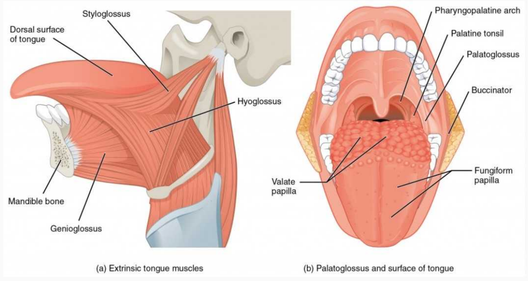
Answer

All lymphatics from the tongue ultimately drain into the deep cervical chain of nodes along the internal jugular vein, particularly the jugulo-omohyoid lymph node.

Notes

The tongue is a muscular structure that forms part of the floor of the oral cavity and part of the anterior wall of the oropharynx. The anterior two-thirds of the tongue are in the oral cavity. The posterior root of the tongue is attached to the mandible and the hyoid bone. The anterior wall of the oropharynx inferior to the oropharyngeal isthmus is formed by the upper part of the posterior one-third of the tongue.

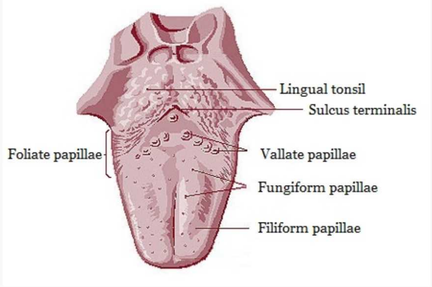
A pair of mucosal pouches (valleculae), one on each side of the midline, between the base of the tongue and epiglottis, are depressions formed between the midline mucosal fold and two lateral folds that connect the tongue to the epiglottis.



By OpenStax [CC BY 4.0], via Wikimedia Commons

Papillae and lingual tonsil

The oral (anterior two-thirds) and pharyngeal (posterior one-third) surfaces are separated by a V-shaped terminal sulcus of the tongue. The superior surface of the oral part of the tongue is covered by papillae, the majority of which have tastebuds on their surface. The mucosa of the pharyngeal surface of the tongue is irregular, because of the many small nodules of lymphoid tissue in the submucosa, collectively known as the lingual tonsil.



By Lesion (Own work) [CC BY-SA 3.0], via Wikimedia Commons

Nerve supply

- Sensation from the anterior two-thirds of the tongue is carried by the lingual nerve, branch of the mandibular nerve.
- Taste from the anterior two-thirds of the tongue is carried by the chorda tympani, branch of the facial nerve.
- Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.
- All muscles of the tongue are innervated by the hypoglossal nerve, except for the palatoglossus, which is innervated by the vagus nerve.

Lymphatics

All lymphatics from the tongue ultimately drain into the deep cervical chain of nodes along the internal jugular vein. The pharyngeal part of the tongue drains through the pharyngeal wall directly into mainly the jugulo-omohyoid node of the deep cervical chain. The oral part of the tongue drains both directly into the deep cervical nodes and indirectly into these nodes by passing first through the mylohyoid muscle and into submental and submandibular nodes.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 68 of 115

The medial and lateral pterygoid muscles are innervated by which of the following nerves:

a Facial nerve

b Mandibular division of the trigeminal nerve

c Glossopharyngeal nerve

d Maxillary division of the trigeminal nerve

e Spinal accessory nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 68 of 115

The medial and lateral pterygoid muscles are innervated by which of the following nerves:

a) **Facial nerve** ✗
b) Mandibular division of the trigeminal nerve ✓
c) Glossopharyngeal nerve
d) Maxillary division of the trigeminal nerve
e) Spinal accessory nerve

Answer

Both the medial and lateral pterygoids are innervated by the mandibular division of the trigeminal nerve.

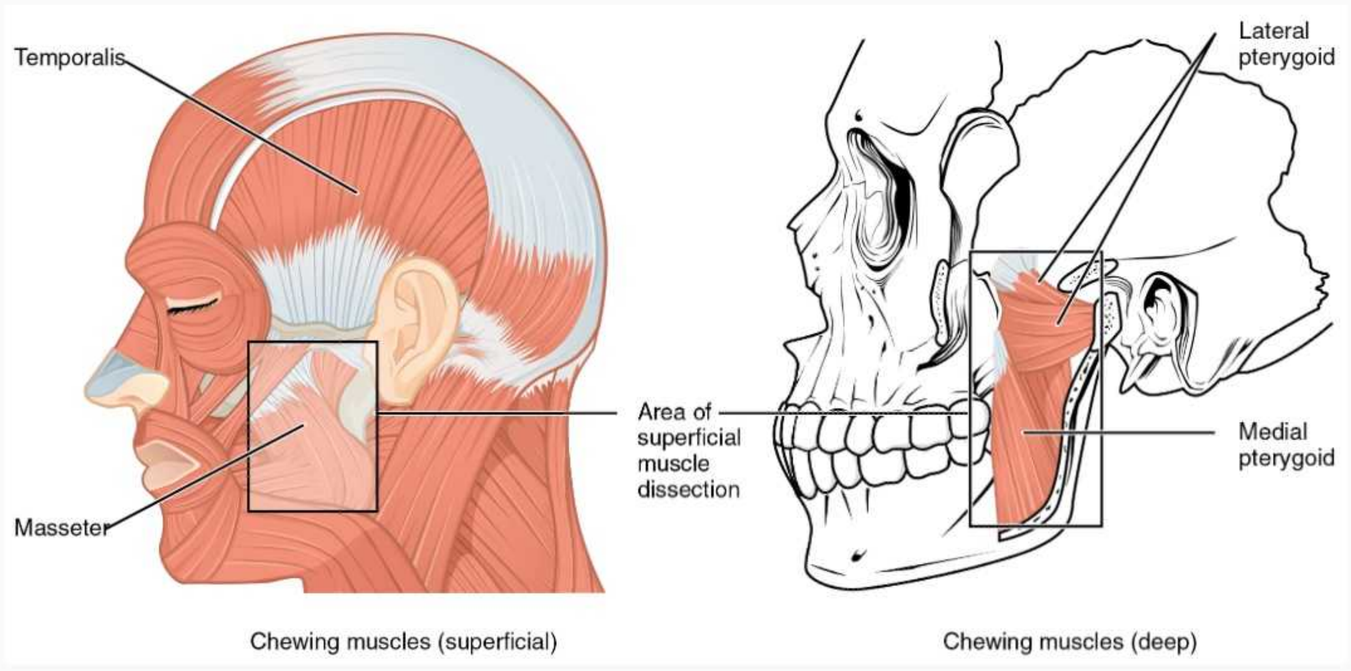
Notes

The lateral pterygoid is the main muscle responsible for protrusion of the lower jaw and also assists in depressing the mandible.

The medial pterygoid mainly elevates the mandible but also assists the lateral pterygoid in protruding the lower jaw.

When the lateral and medial pterygoid muscles contract on only one side, the chin moves to the opposite side. When opposite movements at the two TMJs are coordinated, a chewing movement results.

Both the medial and lateral pterygoids are innervated by the mandibular division of the trigeminal nerve.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 69 of 115

The skin over the cheek is primarily supplied by which of the following nerves:

a Buccal nerve

b Infratrochlear nerve

c Zygomaticotemporal nerve

d Mental nerve

e Zygomaticofacial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 69 of 115

The skin over the cheek is primarily supplied by which of the following nerves:

a) **Buccal nerve** ✔
b) Infratrochlear nerve
c) Zygomaticotemporal nerve
d) Mental nerve
e) Zygomaticofacial nerve

Answer

The buccal nerve, branch of the mandibular nerve, innervates the cheek.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

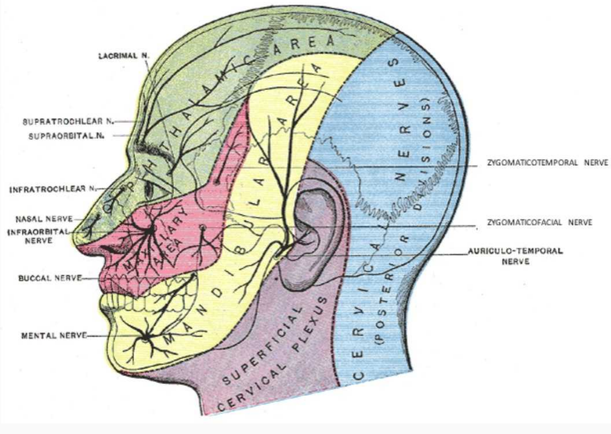
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 70 of 115

Which of the following structures does NOT pass through the parotid gland:

a Facial nerve

b External carotid artery

c Retromandibular vein

d Posterior auricular artery

e Mandibular division of the trigeminal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 70 of 115

Which of the following structures does NOT pass through the parotid gland:

a) Facial nerve ✖
b) External carotid artery
c) Retromandibular vein
d) Posterior auricular artery
e) Mandibular division of the trigeminal nerve ✔

Answer

The facial nerve, retromandibular vein and external carotid artery are important structures that pass into the substance of the parotid gland. The posterior auricular artery arises from the external carotid artery within the parotid gland. The mandibular division of the trigeminal nerve does not pass through the parotid gland.

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

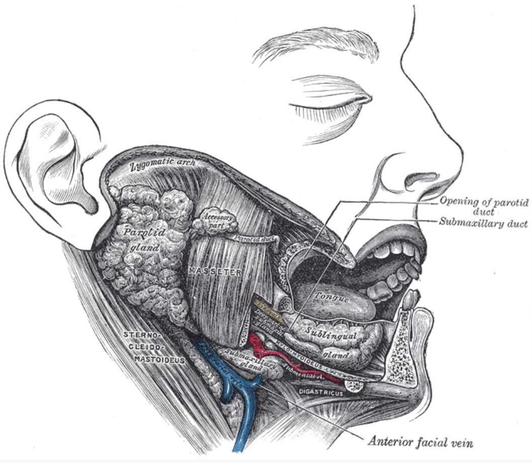
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

Anatomy: Head



Question 71 of 115

The superior oblique muscle acts to produce which of the following eyeball movements:

a Intorsion, depression and abduction

b Intorsion and elevation

c Elevation

d Elevation and adduction

e Intorsion and abduction

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 71 of 115

The superior oblique muscle acts to produce which of the following eyeball movements:

a) Intorsion, depression and abduction ✔
b) Intorsion and elevation
c) Elevation
d) Elevation and adduction
e) Intorsion and abduction

Answer

The superior oblique muscle acts to medially rotate (intort), depress and abduct the eyeball.

Notes

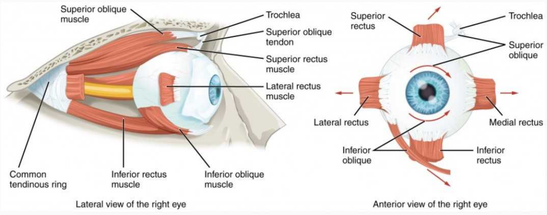
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 72 of 115

The skin of the upper forehead extending back to the middle of the scalp is primarily supplied by which of the following nerves:

a Supratrochlear nerve

b Great auricular nerve

c Supraorbital nerve

d Zygomaticotemporal nerve

e Zygomaticofacial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 72 of 115

The skin of the upper forehead extending back to the middle of the scalp is primarily supplied by which of the following nerves:

a) Supratrochlear nerve ✗
b) Great auricular nerve
c) Supraorbital nerve ✓
d) Zygomaticotemporal nerve
e) Zygomaticofacial nerve

Answer

The supraorbital nerve, branch of the ophthalmic nerve, innervates skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

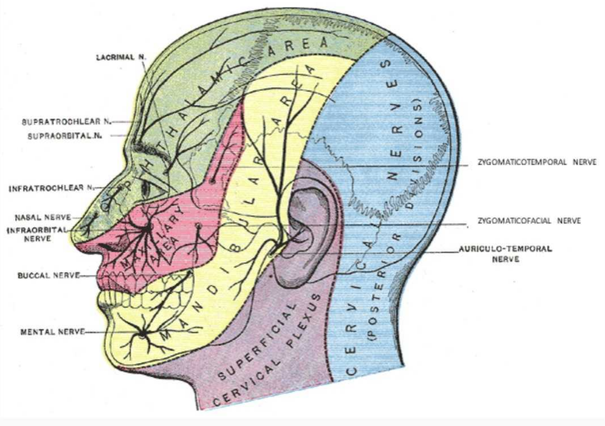
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 73 of 115

The temporalis muscle is innervated by which of the following nerves:

a Facial nerve

b Mandibular division of the trigeminal nerve

c Ophthalmic division of the trigeminal nerve

d Maxillary division of the trigeminal nerve

e Spinal accessory nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 73 of 115

The temporalis muscle is innervated by which of the following nerves:

a) Facial nerve ✗
b) Mandibular division of the trigeminal nerve ✓
c) Ophthalmic division of the trigeminal nerve
d) Maxillary division of the trigeminal nerve
e) Spinal accessory nerve

Answer

The temporalis muscle is innervated by the mandibular division of the trigeminal nerve.

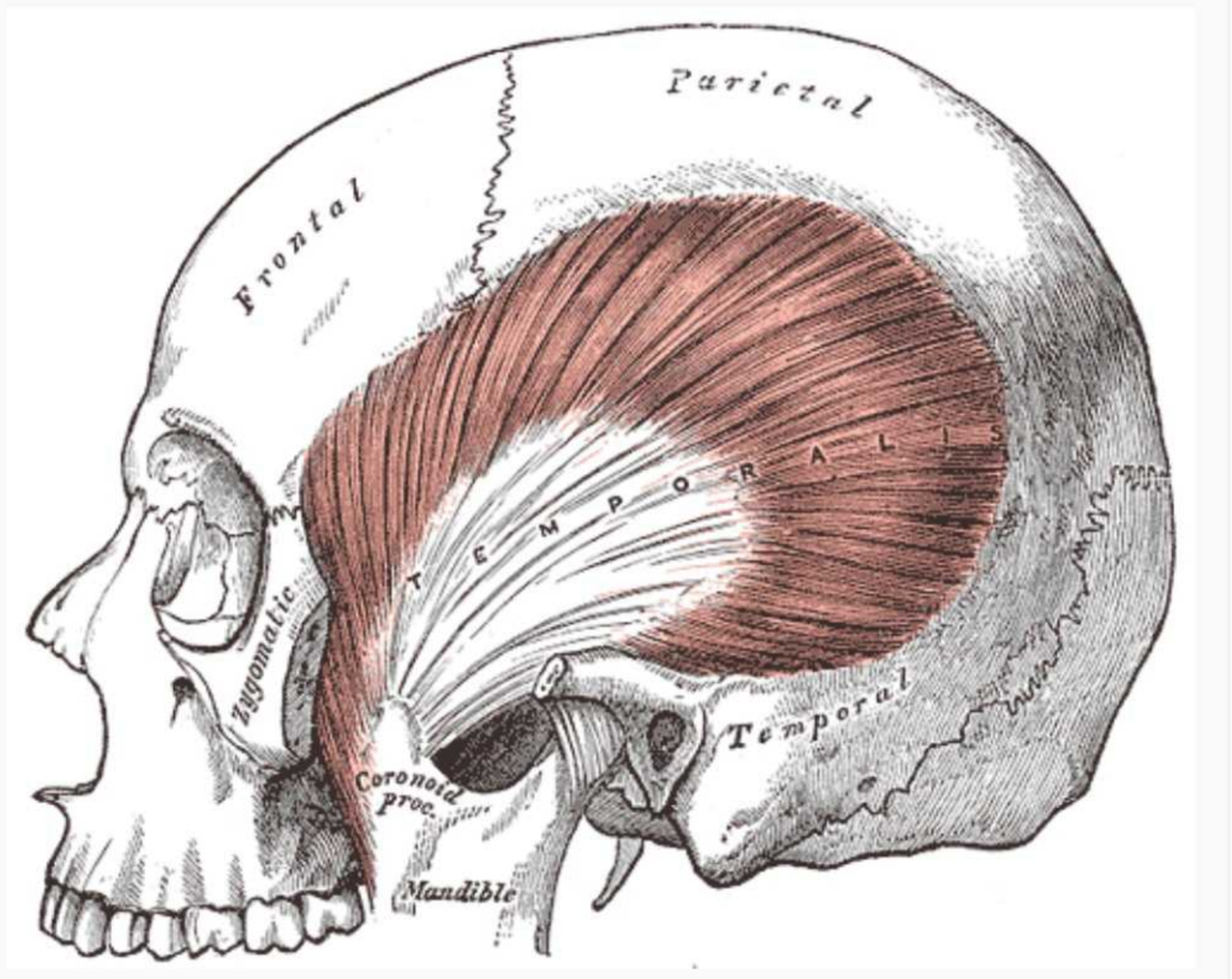
Notes

Muscle	Temporalis
Origin	Bony surface of temporal fossa superior to the inferior temporal line
Insertion	Coronoid process of mandible and along anterior margin of ramus of mandible
Action	Elevation of mandible, retraction of mandible, side-to-side movements of mandible
Innervation	Mandibular division of trigeminal nerve

The temporalis muscle is a large fan-shaped muscle that fills much of the temporal fossa. It originates from the bony surfaces of the temporal fossa superiorly to the inferior temporal line and is attached laterally to the surface of the temporal fascia. Distally it inserts onto the coronoid process of the mandible and along the anterior margin of the ramus of the mandible (almost to the last molar tooth).

The temporalis is a powerful elevator of the mandible, acts to retract the mandible and also participates in side-to-side movements of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 74 of 115

All of the muscles of the tongue (other than the palatoglossus) are innervated by which of the following nerves:

a Facial nerve

b Hypoglossal nerve

c Vagus nerve

d Glossopharyngeal nerve

e Mandibular nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 75 of 115

The inferior rectus muscle acts to produce which of the following eyeball movements:

a Depression and intorsion

b Depression and abduction

c Depression and adduction

d Depression, adduction and extorsion

e Depression and extorsion

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 75 of 115

The inferior rectus muscle acts to produce which of the following eyeball movements:

a) **Depression and intorsion** ✖
b) Depression and abduction
c) Depression and adduction
d) Depression, adduction and extorsion ✔
e) Depression and extorsion

Answer

The inferior rectus muscle acts to depress, adduct and laterally rotate the eyeball.

Notes

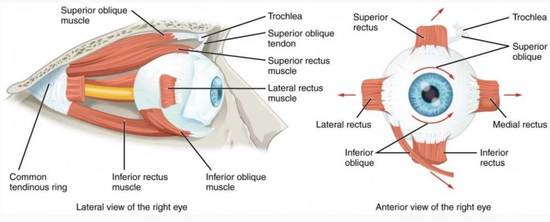
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 76 of 115

A 29 year old male patient is brought into ED by the police. The man was found unconscious after a witnessed fight. The patient has significant bruising and abrasions to his face. Imaging reveals that the middle meningeal artery has ruptured. Where would you most likely see blood in this patient:

a Subarachnoid space

b Subdural space

c Extradural space

d Cranial dural sinuses

e Ventricles

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 76 of 115

A 29 year old male patient is brought into ED by the police. The man was found unconscious after a witnessed fight. The patient has significant bruising and abrasions to his face. Imaging reveals that the middle meningeal artery has ruptured. Where would you most likely see blood in this patient:

a) **Subarachnoid space** ✗
b) Subdural space
c) Extradural space ✓
d) Cranial dural sinuses
e) Ventricles

Answer

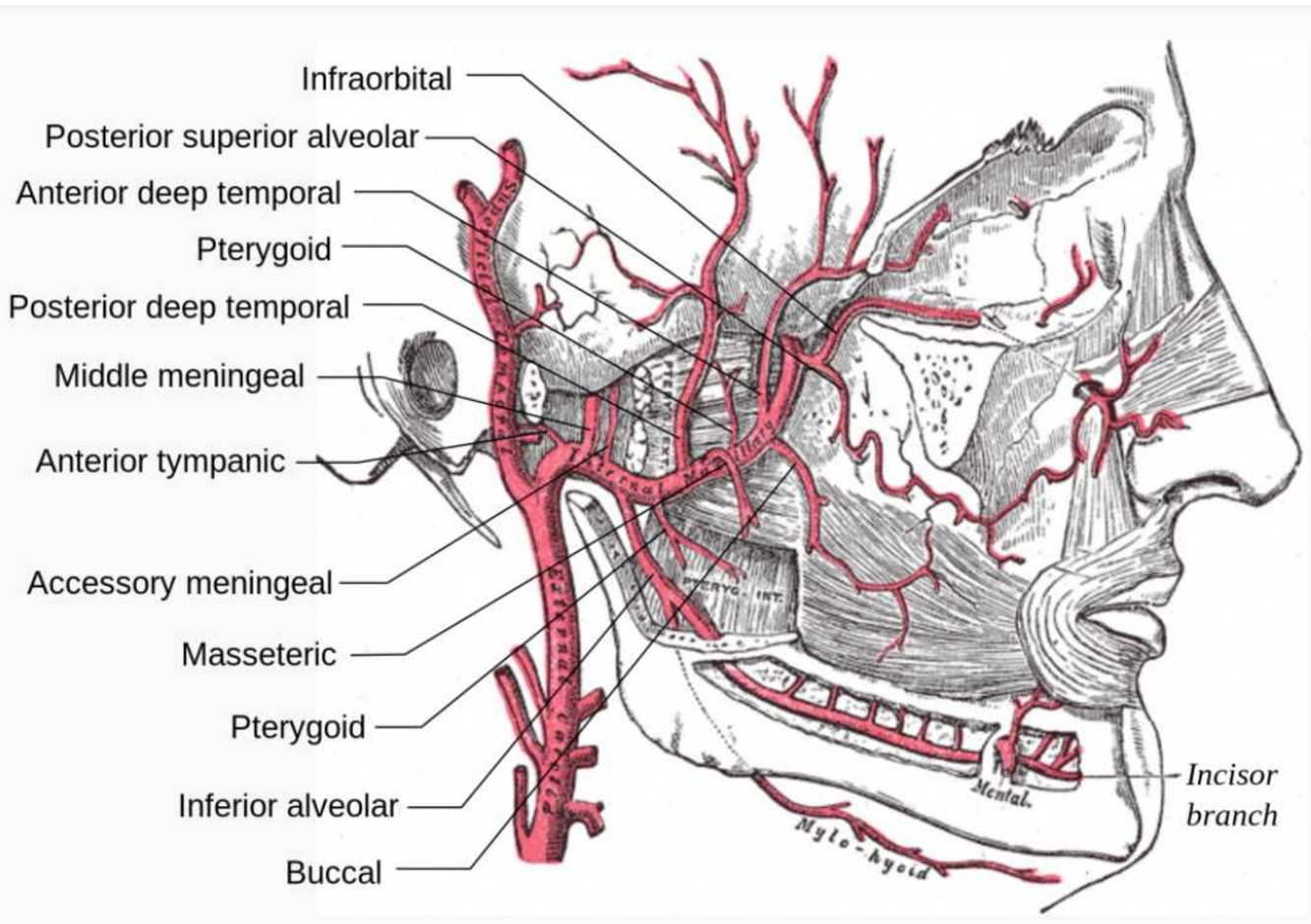
Within the cranial cavity, the middle meningeal artery and its branches travel in the outer layer of the dura mater, where they can be damaged by lateral blows to the head. When the vessels are torn, the leaking blood, which is under arterial pressure, slowly separates the dura from its attachment to bone, resulting in an extradural haematoma.

Notes

The maxillary artery is the largest branch of the external carotid artery and a major source of blood supply for the nasal cavity, the lateral wall and roof of the oral cavity, all teeth and the dura mater in the cranial cavity.

It passes through and supplies the infratemporal fossa and then enters the pterygopalatine fossa, where it gives origin to terminal branches.

The middle meningeal artery arises from the maxillary artery and ascends vertically to enter the cranial cavity. Within the cranial cavity, the middle meningeal artery and its branches travel in the outer layer of the dura mater, where they can be damaged by lateral blows to the head. When the vessels are torn, the leaking blood, which is under arterial pressure, slowly separates the dura from its attachment to bone, resulting in an extradural haematoma.



By User:Mikael Häggström [Public domain, Public domain or Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 77 of 115



The area of skin over the anterior temple above the zygomatic arch is primarily supplied by which of the following nerves:

a Zygomaticotemporal nerve

b Auriculotemporal nerve

c Supratrochlear nerve

d Buccal nerve

e Zygomaticofacial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 77 of 115

The area of skin over the anterior temple above the zygomatic arch is primarily supplied by which of the following nerves:

a) **Zygomaticotemporal nerve** ✔
b) Auriculotemporal nerve
c) Supratrochlear nerve
d) Buccal nerve
e) Zygomaticofacial nerve

Answer

The zygomaticotemporal nerve, branch of the maxillary nerve, innervates a small area of the anterior temple above the zygomatic arch.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

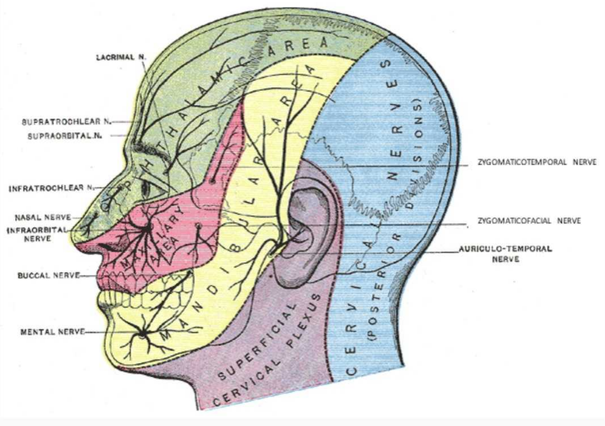
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 78 of 115

Regarding the lacrimal apparatus, which of the following statements is CORRECT:

a The lacrimal gland is located in the superomedial region of the orbit.

b The lacrimal gland is located in the inferomedial region of the orbit.

c The lacrimal sac empties via lacrimal canaliculi.

d The nasolacrimal duct empties into the middle nasal meatus.

e Lacrimal fluid is drained from the eyeball through the lacrimal punctum.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 78 of 115

Regarding the lacrimal apparatus, which of the following statements is CORRECT:

a) **The lacrimal gland is located in the superomedial region of the orbit.** ✗
b) The lacrimal gland is located in the inferomedial region of the orbit.
c) The lacrimal sac empties via lacrimal canaliculi.
d) The nasolacrimal duct empties into the middle nasal meatus.
e) Lacrimal fluid is drained from the eyeball through the lacrimal punctum. ✓

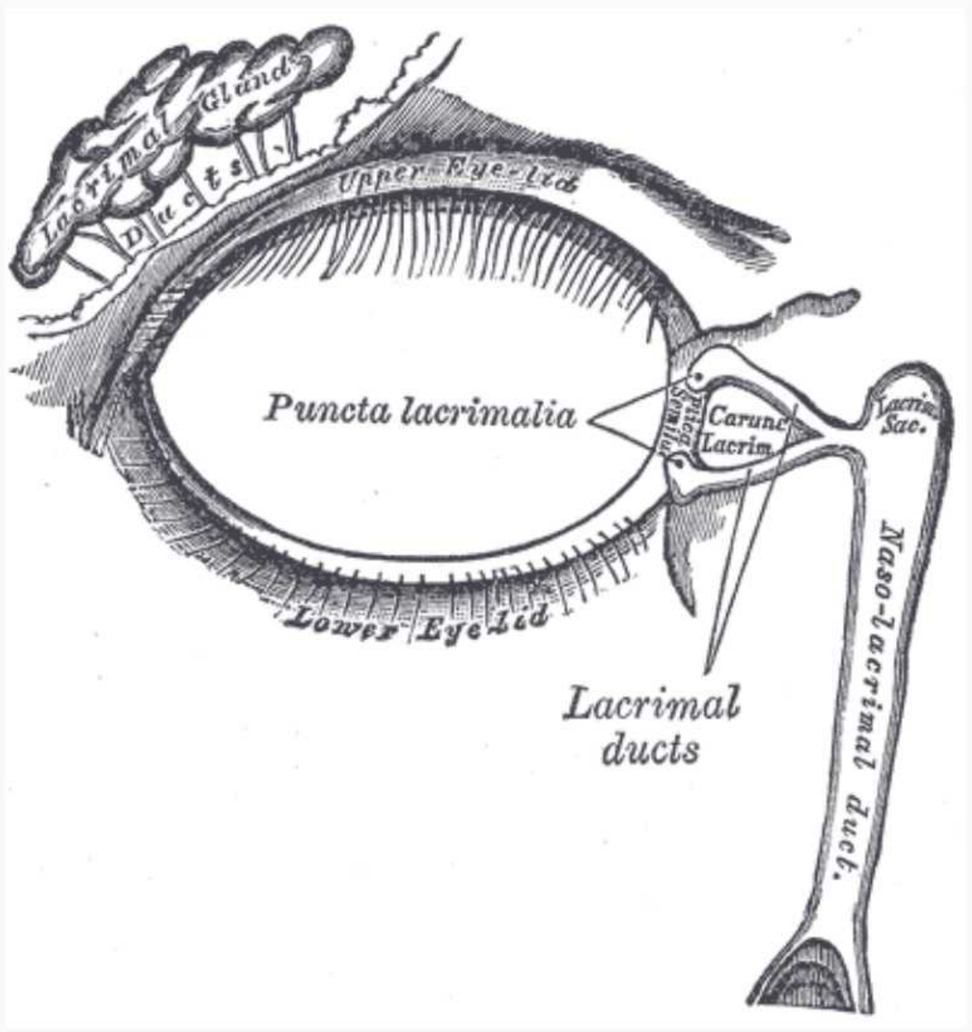
Answer

Lacrimal fluid is drained from the eyeball through the lacrimal punctum.

Notes

The lacrimal apparatus is involved in the production, movement and drainage of fluid from the surface of the eyeball. It is made up of the lacrimal gland and its ducts, the lacrimal canaliculi, the lacrimal sac and the nasolacrimal duct.

The lacrimal gland is anterior in the superolateral region of the orbit. Numerous ducts empty the glandular secretions into the lateral part of the conjunctiva. Fluid is moved across the surface of the eyeball from lateral to medial as the eyelids blink. The fluid accumulates medially in the lacrimal lake and is drained from the lake by the lacrimal canaliculi (ducts) through the lacrimal punctum. Passing medially the lacrimal canaliculi join the lacrimal sac. From the lacrimal sac, the fluid drains through the nasolacrimal duct, emptying into the inferior nasal meatus of the nasal cavity.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 79 of 115

Regarding the middle ear, which of the following statements is INCORRECT:

a The middle ear is found in the petrous temporal bone.

b The middle ear communicates with the mastoid area posteriorly.

c The pharyngotympanic tube connects the middle ear to the oropharynx.

d The pharyngotympanic tube equalizes pressure on both sides of the tympanic membrane.

e The incus is in contact with both the malleus and the stapes.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 79 of 115

Regarding the middle ear, which of the following statements is INCORRECT:

a) **The middle ear is found in the petrous temporal bone.** ✖
b) The middle ear communicates with the mastoid area posteriorly.
c) The pharyngotympanic tube connects the middle ear to the oropharynx. ✔
d) The pharyngotympanic tube equalizes pressure on both sides of the tympanic membrane.
e) The incus is in contact with both the malleus and the stapes.

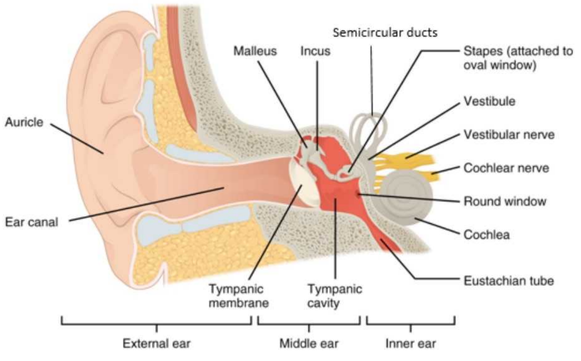
Answer

The pharyngotympanic tube connects the middle ear to the nasopharynx and acts to equalize pressure on both sides of the tympanic membrane.

Notes

The ear is the organ of hearing and balance. It is divided into

- the external ear – consisting of the auricle (pinna) and the external acoustic meatus
- the middle ear – a cavity in the petrous part of the temporal bone bounded laterally by the tympanic membrane and medially by the lateral wall of the internal ear
- the internal ear – a series of cavities within the petrous part of the temporal bone bounded laterally by the middle ear and medially by the internal acoustic meatus.



By OpenStax [CC BY 4.0], via Wikimedia Commons

The middle ear

The middle ear is an air-filled cavity in the petrous temporal bone between the tympanic membrane laterally and the lateral wall of the internal wall medially.

Its basic function is to transmit vibrations of the tympanic membrane across the cavity of the middle ear to the internal ear which it does through three interconnected bones – the malleus (connected to the tympanic membrane), the incus (connected to the malleus) and the stapes (connected to the incus and attached to the lateral wall of the internal ear at the oval window).

The middle ear communicates with the mastoid area posteriorly and the nasopharynx (via the pharyngotympanic tube) anteriorly. The pharyngotympanic tube equalizes pressure on both sides of the tympanic membrane.

The mucous membrane lining the mastoid air cells is continuous with the mucous membranes throughout the middle ear. Therefore infections in the middle ear can easily spread into the mastoid area (and from here to the middle cranial fossa).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 80 of 115

Which of the following muscles is responsible for opening the eye:

a Frontalis

b Levator palpebrae superioris

c Superior rectus

d Superior oblique

e Orbicularis oculi

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 80 of 115

Which of the following muscles is responsible for opening the eye:

a) Frontalis ✗
b) Levator palpebrae superioris ✓
c) Superior rectus
d) Superior oblique
e) Orbicularis oculi

Answer

The levator palpebrae superioris muscle, innervated by the oculomotor nerve, is responsible for opening the eye.

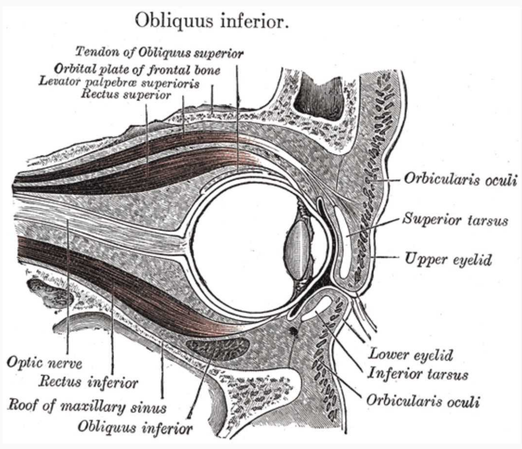
Notes

The upper and lower eyelids are anterior structures that protect the eyeball when closed. The space between the eyelids is the palpebral fissure.

The layers of the eyelids consist of (from anterior to posterior)

- skin
- subcutaneous tissue
- voluntary muscle
- the orbital septum (an extension of periosteum which attaches to the tarsus)
- the tarsus (a plate of dense connective tissue which provide the major support for the eyelid)
- conjunctiva (a thin membrane, composed primarily of stratified squamous epithelium, which covers the posterior surface of each eyelid before reflecting onto the sclera of the eyeball).

The upper and lower eyelids are basically the same, except for the addition of two muscles in the upper eyelid (the levator palpebrae superioris and the superior tarsal muscle).



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Muscles

The orbicularis oculi muscle is innervated by the facial nerve and closes the eyelids. Loss of function of the orbicularis oculi causes an inability to close the eyelids tightly and a drooping of the lower eyelid (ectropion) resulting in spillage of tears. This leads to drying of the cornea, with subsequent ulceration and secondary infection.

The levator palpebrae superioris muscle originates from the roof of the orbit and inserts into the superior tarsus, is innervated by the oculomotor nerve and raises the upper eyelid. The superior tarsal muscle is a collection of smooth muscle fibres in companion with the levator palpebrae superioris, innervated by postganglionic sympathetic fibres from the superior cervical ganglion which helps to maintain upper eyelid opening. Loss of function of the levator palpebrae superioris or the superior tarsal muscle results in a complete or partial ptosis respectively.

Innervation

The sensory innervation of the eyelids and conjunctiva is from:

- the supraorbital nerve (ophthalmic nerve)
- the supratrochlear (ophthalmic nerve)
- the infratrochlear nerve (ophthalmic nerve)
- lacrimal branches (ophthalmic nerve)
- the infraorbital nerve (maxillary nerve).

Glands

Embedded in the tarsal plates are modified sebaceous tarsal glands (Meibomian glands) which empty an oily substance onto the free margin of each eyelid that increases the viscosity of tears and decreases the rate of evaporation of tears from the surface of the eyeball.

Blockage and inflammation of a tarsal gland is a chalazion and is on the inner surface of the eyelid. External sebaceous and sweat glands associated with the eyelash follicles may also become blocked and inflamed causing a stye on the edge of the eyelid.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 81 of 115

The temporalis muscle originates from which of the following structures:

a Occipital bone

b Zygomatic bone

c Temporal fossa

d Maxilla

e Anterior aspect of frontal bone

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 81 of 115

The temporalis muscle originates from which of the following structures:

a) Occipital bone ✗
b) Zygomatic bone
c) Temporal fossa ✓
d) Maxilla
e) Anterior aspect of frontal bone

Answer

The temporalis muscle originates from the bony surfaces of the temporal fossa superiorly to the inferior temporal line.

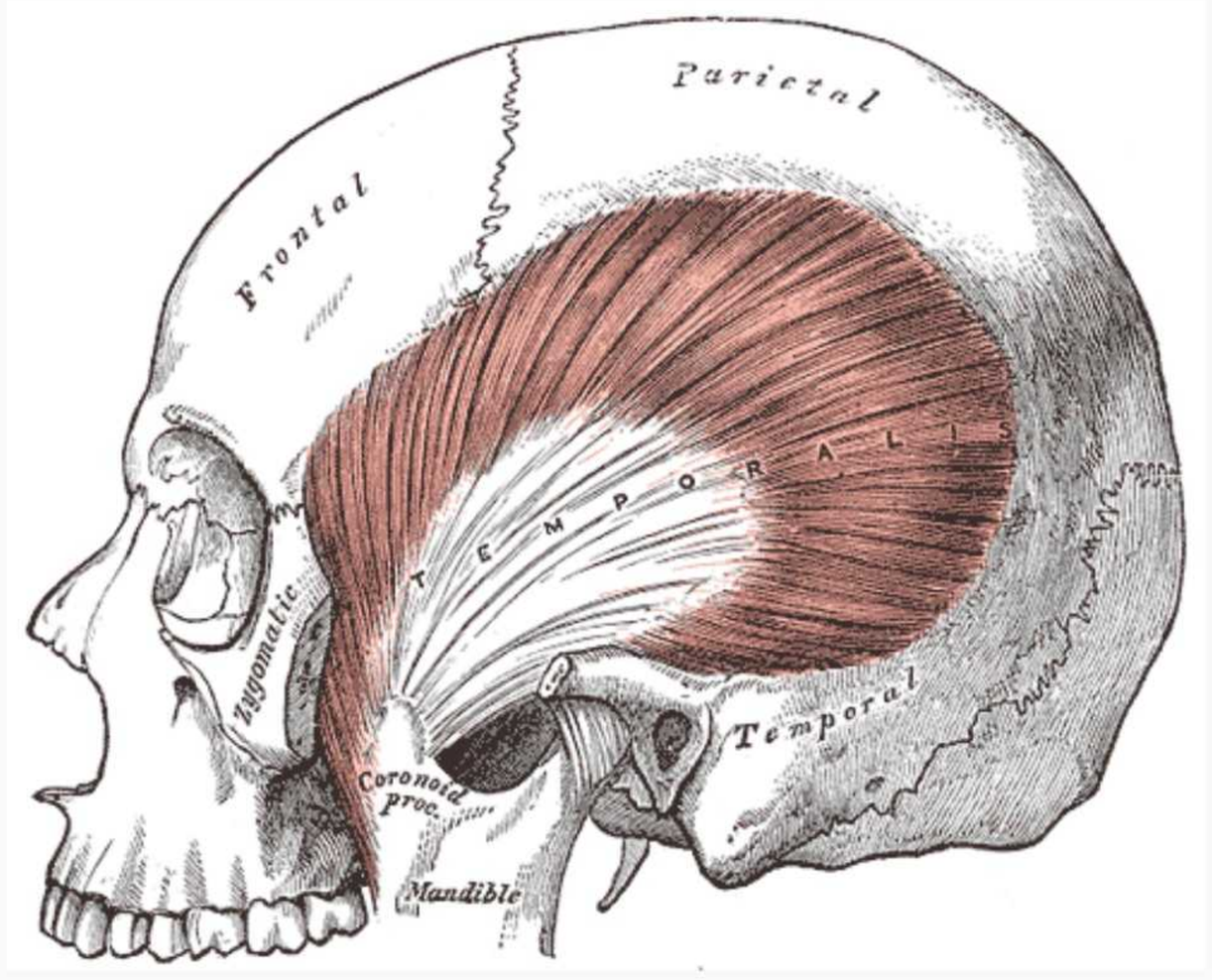
Notes

Muscle	Temporalis
Origin	Bony surface of temporal fossa superior to the inferior temporal line
Insertion	Coronoid process of mandible and along anterior margin of ramus of mandible
Action	Elevation of mandible, retraction of mandible, side-to-side movements of mandible
Innervation	Mandibular division of trigeminal nerve

The temporalis muscle is a large fan-shaped muscle that fills much of the temporal fossa. It originates from the bony surfaces of the temporal fossa superiorly to the inferior temporal line and is attached laterally to the surface of the temporal fascia. Distally it inserts onto the coronoid process of the mandible and along the anterior margin of the ramus of the mandible (almost to the last molar tooth).

The temporalis is a powerful elevator of the mandible, acts to retract the mandible and also participates in side-to-side movements of the mandible.

It is innervated by the mandibular division of the trigeminal nerve.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 82 of 115

The area of skin over prominence of the cheekbone is primarily supplied by which of the following nerves:

a Buccal nerve

b Zygomaticofacial nerve

c Auriculotemporal nerve

d Zygomaticotemporal nerve

e Infraorbital nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 82 of 115

The area of skin over prominence of the cheekbone is primarily supplied by which of the following nerves:

a) Buccal nerve ✖
b) Zygomaticofacial nerve ✔
c) Auriculotemporal nerve
d) Zygomaticotemporal nerve
e) Infraorbital nerve

Answer

The zygomaticofacial nerve, branch of the maxillary nerve, innervates this small area of skin over the zygomatic bone.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

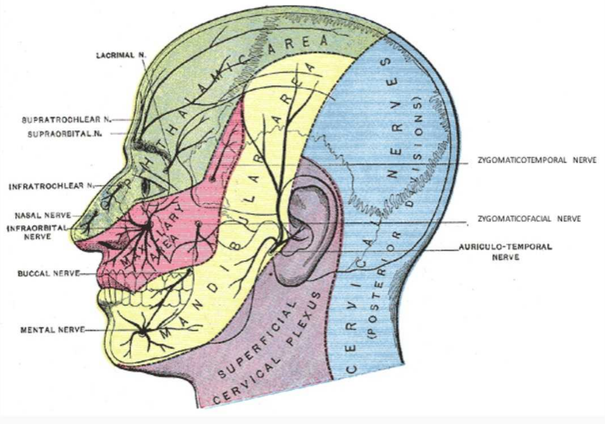
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 83 of 115

Regarding the eyeball, which of the following statements is INCORRECT:

a The extraocular muscles attach to the sclera of the eyeball.

b The outer layer of the eyeball receives sensory supply from branches of the trigeminal nerve.

c The fovea centralis is the thinnest area of the retina.

d The ciliary muscle is responsible for accommodation of the lens.

e The ciliary muscle is innervated by the optic nerve.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 83 of 115

Regarding the eyeball, which of the following statements is INCORRECT:

a) **The extraocular muscles attach to the sclera of the eyeball.** ✗
b) The outer layer of the eyeball receives sensory supply from branches of the trigeminal nerve.
c) The fovea centralis is the thinnest area of the retina.
d) The ciliary muscle is responsible for accommodation of the lens.
e) The ciliary muscle is innervated by the optic nerve. ✓

Answer

The ciliary muscle is innervated by parasympathetic fibres from the oculomotor nerve.

Notes

The walls of the eyeball consist of three layers:

- the outer fibrous layer of the sclera posteriorly and the cornea anteriorly
- the middle vascular layer of the choroid posteriorly which is continuous with the ciliary body and iris anteriorly
- the inner retina.

The anterior and posterior chambers are the areas posterior to the cornea, and anterior to the lens. The posterior four-fifths of the eyeball, from the lens to the retina, is the vitreous chamber filled with the vitreous body, a transparent gelatinous substance.

Sclera and cornea

The sclera is an opaque white layer of dense connective tissue that provides attachment for the muscles involved in eyeball movement.

The transparent cornea is the anterior protrusion of the eyeball, continuous with the sclera anteriorly and allows light the enter to eyeball.

This outer layer receives its sensory supply from branches of the trigeminal nerve, which acts as the afferent pathway of the corneal blink reflex (the facial nerve is the efferent pathway of the corneal blink reflex, mediated by the orbicularis oculi muscle).

Choroid, lens and ciliary body

The choroid is posterior and represents two-thirds of the vascular layer; it is a thin, highly vascular, pigmented layer firmly attached to the retina internally and loosely attached to the sclera externally.

The ciliary body extends from the anterior border of the choroid and is composed of the ciliary muscle and the ciliary processes, from which extends the lens attached to the suspensory ligament of the lens.

The lens is a transparent, biconvex elastic disc attached to muscles associated with the outer wall of the eyeball, which can change its refractive ability to maintain visual acuity.

Contraction of the ciliary muscle changes the shape of the lens to accommodate the lens for near vision. The ciliary muscle is innervated by parasympathetic fibres of the oculomotor nerve.

Iris and pupil

The iris, the coloured part of the eye with the central opening forming the pupil, projects outwards from the ciliary body. Smooth muscle fibres within the iris control the size of the pupil.

The sphincter pupillae muscle is innervated by parasympathetic fibres of the oculomotor nerve which acts as the efferent pathway of the pupillary light reflex (the optic nerve is the afferent pathway of the pupillary light reflex). Loss of parasympathetic innervation results in a fixed dilated pupil.

The dilator pupillae muscle is innervated by postganglionic sympathetic fibres arising from the superior cervical ganglion. Loss of sympathetic innervation results in a constricted pupil (miosis). Horner's syndrome results from damage to the sympathetic chain and is characterised by the triad of miosis, partial ptosis (due to loss of innervation to the superior tarsal muscle) and anhydrosis.

Chambers

The anterior chamber is the area of the eyeball directly anterior to the iris. Posterior to the iris and anterior to the lens is the smaller posterior chamber. The chambers are continuous with each other through the pupillary opening. They are filled with aqueous humour, which is secreted into the posterior chamber, flows into the anterior chamber and is absorbed into the canal of Schlemm. The aqueous humour supplies nutrients to the avascular cornea and lens and maintains intraocular pressure. If the normal cycle of production and absorption is disturbed, this can cause glaucoma due to raised intraocular pressure.

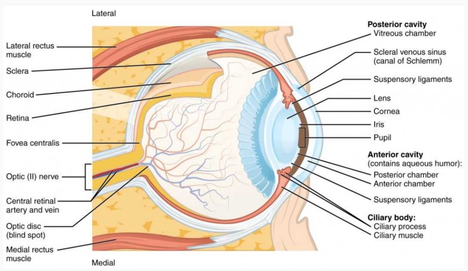
Retina and optic disc

The inner layer of the eyeball is the retina, divided into the posterior optic part and the non-visual part, which covers the internal surface of the ciliary body and the iris.

The optic part of the retina consists of an outer pigmented layer firmly attached to the choroid and the neural layer attached to the pigmented layer around the optic nerve.

The optic disc is where the optic nerve leaves the retina. Lateral to the optic disc, a small area is the macula lutea with its central depression, the fovea centralis. This is the thinnest area of the retina and visual sensitivity is higher here than elsewhere in the retina because it has fewer rods and more cones.

The retina is supplied by the central retinal artery from the ophthalmic artery.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 84 of 115

Regarding the nasal cavities, which of the following statements is INCORRECT:

a The nasal cavity receives its blood supply from branches of the external and internal carotid artery.

b The nasolacrimal duct opens onto the inferior nasal meatus.

c The openings of the paranasal sinuses are on medial wall.

d The floor of the nasal cavity is formed by the hard palate.

e Three nasal conchae project medially and inferiorly from the lateral wall.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 84 of 115

Regarding the nasal cavities, which of the following statements is INCORRECT:

a) ✖
The nasal cavity receives its blood supply from branches of the external and internal carotid artery.

b) The nasolacrimal duct opens onto the inferior nasal meatus.

c) The openings of the paranasal sinuses are on medial wall. ✔

d) The floor of the nasal cavity is formed by the hard palate.

e) Three nasal conchae project medially and inferiorly from the lateral wall.

Answer

The openings of the paranasal sinuses are on the lateral wall and roof of the nasal cavities. The frontal and maxillary sinuses open into the middle meatus, the ethmoidal cells open into the superior or middle meatus and the sphenoidal sinuses open into the sphenoethmoidal recess.

Notes

The nasal cavities are separated from each other by a midline nasal septum, from the oral cavity below by the hard palate and from the cranial cavity above by parts of the frontal, palatine, ethmoid and sphenoid bones. The nasal cavity is lined by ciliated epithelial cells which help trap and remove particulate matter from the airway.

Anatomical boundaries

Each nasal cavity has a floor, a roof, a medial and a lateral wall.

Space	Nasal cavity
Floor	Hard palate (palatine process of maxilla and horizontal plate of palatine bone)
Roof	Frontal bone, nasal bone, cribriform plate of ethmoid bone, sphenoid bone
Medial wall	Thin nasal septum (formed primarily from perpendicular plate of ethmoid bone, vomer and septal cartilage)
Lateral wall	Ethmoid bone, nasal bone, palatine bone, sphenoid bone, lacrimal bone, maxilla, conchae

The floor of each nasal cavity consists of soft tissues of the external nose and the upper surface of the palatine process of the maxilla and the horizontal plate of the palatine bone (which together form the hard palate).

The roof of the nasal cavity is formed:

- anteriorly by the nasal spine of the frontal bone and the nasal bones, and the lateral processes of the septal cartilage and cartilages of the external nose
- centrally by the cribriform plate of the ethmoid bone
- posteriorly by the sphenoid bone and palatine bone.

The medial wall of the nasal cavity is the mucosa-covered surface of the thin nasal septum.

Bony support for the lateral wall of the nasal cavity is provided by the ethmoid bone, palatine bone, sphenoid bone, lacrimal bones and maxillae.

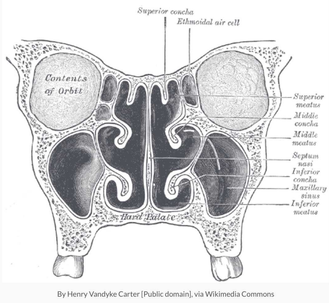
The lateral wall is characterised by three curved shelves of bone – the conchae – which run one above the other and project medially and inferiorly across the nasal cavity. These conchae increase the surface area of contact between tissues of the lateral wall and respired air.

The conchae divide each nasal cavity into four air channels:

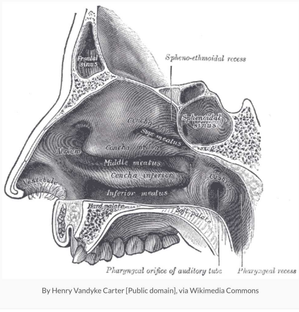
- an inferior nasal meatus (between the inferior concha and the nasal floor)
- a middle nasal meatus
- a superior nasal meatus
- a sphenoid-ethmoidal recess (between the superior concha and the nasal roof).

The openings of the paranasal sinuses are on the lateral wall and roof of the nasal cavities.

In addition the lateral wall also contains the nasolacrimal duct opening onto the inferior nasal meatus, draining tears from the eye into the nasal cavity.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Nerve supply

The nasal cavities are innervated by:

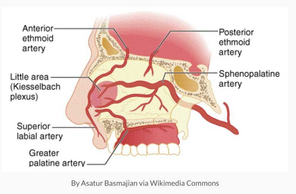
- The olfactory nerve – carrying olfaction
- The trigeminal nerve – carrying general sensation, anteriorly by the ophthalmic nerve and posteriorly by the maxillary nerve
- The facial nerve – carrying parasympathetic fibres to the nasal glands (which join branches of the maxillary nerve in the pterygopalatine fossa).

Blood supply

The nasal cavities have a rich vascular supply to allow them to alter the humidity and temperature of respired air.

Blood supply to the nasal cavity is by terminal branches of the maxillary and facial arteries (from the external carotid artery) and ethmoidal branches of the ophthalmic artery (from the internal carotid artery).

The vessels form extensive anastomoses with each other, particularly in the anterior region of the medial wall where there are anastomoses between branches of the greater palatine (maxillary artery), sphenopalatine (maxillary artery), superior labial (facial artery) and anterior ethmoidal arteries (ophthalmic artery) – this area is known as Little's area and is the major site of epistaxis.



By Asatur Basmajian via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 85 of 115



Taste from the posterior one-third of the tongue is carried by which of the following nerves:

a Facial nerve

b Chorda tympani

c Glossopharyngeal nerve

d Hypoglossal nerve

e Lingual nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 85 of 115

Taste from the posterior one-third of the tongue is carried by which of the following nerves:

a) Facial nerve ✖
b) Chorda tympani
c) Glossopharyngeal nerve ✔
d) Hypoglossal nerve
e) Lingual nerve

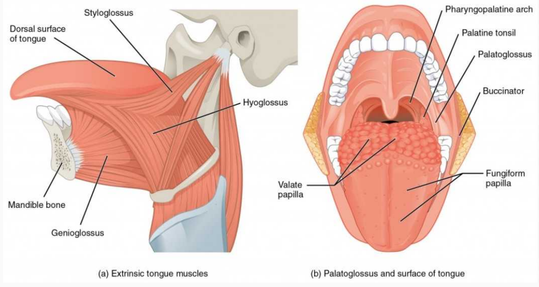
Answer

Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.

Notes

The tongue is a muscular structure that forms part of the floor of the oral cavity and part of the anterior wall of the oropharynx. The anterior two-thirds of the tongue are in the oral cavity. The posterior root of the tongue is attached to the mandible and the hyoid bone. The anterior wall of the oropharynx inferior to the oropharyngeal isthmus is formed by the upper part of the posterior one-third of the tongue.

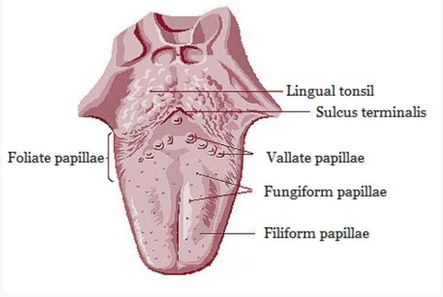
A pair of mucosal pouches (valleculae), one on each side of the midline, between the base of the tongue and epiglottis, are depressions formed between the midline mucosal fold and two lateral folds that connect the tongue to the epiglottis.



By OpenStax [CC BY 4.0], via Wikimedia Commons

Papillae and lingual tonsil

The oral (anterior two-thirds) and pharyngeal (posterior one-third) surfaces are separated by a V-shaped terminal sulcus of the tongue. The superior surface of the oral part of the tongue is covered by papillae, the majority of which have tastebuds on their surface. The mucosa of the pharyngeal surface of the tongue is irregular, because of the many small nodules of lymphoid tissue in the submucosa, collectively known as the lingual tonsil.



By Lesion (Own work) [CC BY-SA 3.0], via Wikimedia Commons

Nerve supply

- Sensation from the anterior two-thirds of the tongue is carried by the lingual nerve, branch of the mandibular nerve.
- Taste from the anterior two-thirds of the tongue is carried by the chorda tympani, branch of the facial nerve.
- Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.
- All muscles of the tongue are innervated by the hypoglossal nerve, except for the palatoglossus, which is innervated by the vagus nerve.

Lymphatics

All lymphatics from the tongue ultimately drain into the deep cervical chain of nodes along the internal jugular vein. The pharyngeal part of the tongue drains through the pharyngeal wall directly into mainly the jugulo-omohyoid node of the deep cervical chain. The oral part of the tongue drains both directly into the deep cervical nodes and indirectly into these nodes by passing first through the mylohyoid muscle and into submental and submandibular nodes.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 86 of 115

The hard palate is formed posteriorly by which of the following bones:

a Mandible

b Palatine bone

c Maxillae

d Zygomatic bone

e Sphenoid bone

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 86 of 115

The hard palate is formed posteriorly by which of the following bones:

a) Mandible ✗
b) Palatine bone ✓
c) Maxillae
d) Zygomatic bone
e) Sphenoid bone

Answer

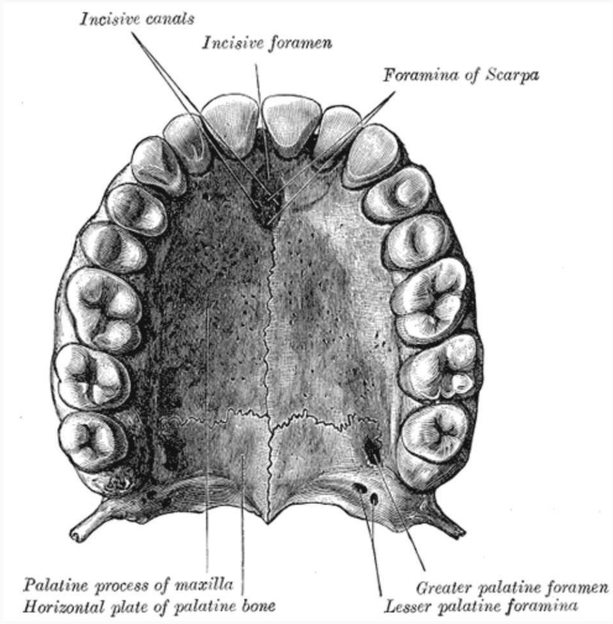
The anterior three-quarters of the hard palate are formed by the palatine processes of the maxillae and the posterior one-quarter is formed by the horizontal plates of the palatine bones.

Notes

The roof of the oral cavity consists of the palate – the anterior hard palate and the posterior soft palate. The hard palate separates the oral cavity from the nasal cavities.

The anterior three-quarters of the hard palate are formed by the palatine processes of the maxillae and the posterior one-quarter is formed by the horizontal plates of the palatine bones.

In the oral cavity, the hard palate is bordered by the upper alveolar arch anteriorly and laterally. Posteriorly the hard palate is continuous with the soft palate.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

The blood supply to the palate is derived from branches from the external carotid artery: the greater palatine branch of the maxillary artery, the ascending palatine branch of the facial artery and the palatine branch of the ascending pharyngeal artery.

Lymphatic vessels from the palate drain into the deep cervical nodes.

The palate is supplied by the greater and lesser palatine nerves and the nasopalatine nerve (general sensory fibres carried in all these nerves originate in the pterygopalatine fossa from the maxillary nerve).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 87 of 115

Regarding the paranasal sinuses, which of the following statements is INCORRECT:

a There are four paired paranasal sinuses.

b The paranasal sinuses receive general sensory supply from branches of the trigeminal nerve.

c The paranasal sinuses develop as outgrowths from the nasal cavities and erode into the surrounding bones.

d The frontal sinuses are the the largest of the paranasal sinuses.

e All of the paranasal sinuses are lined by respiratory mucosa.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 87 of 115

Regarding the paranasal sinuses, which of the following statements is INCORRECT:

a) There are four paired paranasal sinuses. ✖

b) The paranasal sinuses receive general sensory supply from branches of the trigeminal nerve.

c)
The paranasal sinuses develop as outgrowths from the nasal cavities and erode into the surrounding bones.

d) The frontal sinuses are the the largest of the paranasal sinuses. ✔

e) All of the paranasal sinuses are lined by respiratory mucosa.

Answer

The maxillary sinuses are the largest of the paranasal sinuses.

Notes

There are four paired paranasal air sinuses – the ethmoidal cells and the sphenoidal, maxillary and frontal sinuses – named according to the bone in which the sinus is found.

The paranasal sinuses develop as outgrowths from the nasal cavities and erode into the surrounding bones.

All of the paranasal sinuses are lined by respiratory mucosa, open into the nasal cavities and are innervated by branches of the trigeminal nerve.

- The frontal sinuses are the most superior of the sinuses and drain onto the middle meatus of the lateral wall.
- The maxillary sinuses are the largest of the paranasal sinuses and drain onto the middle meatus of the lateral wall.
- The ethmoidal cells drain into the superior or middle meatus.
- The sphenoidal sinuses open into the sphenoethmoidal recess of the nasal cavity.

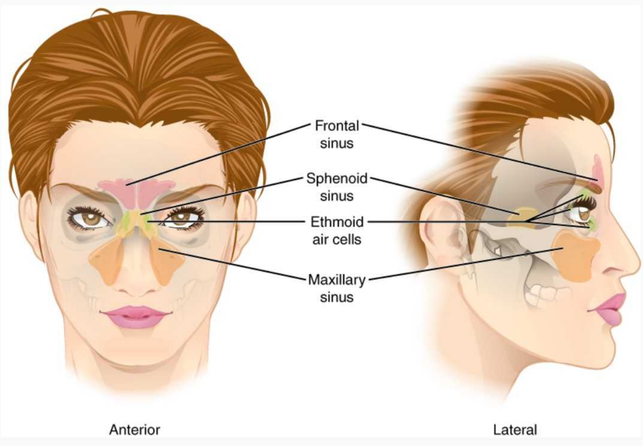
Developmental staging

The maxillary sinus is the first sinus to develop and is filled with fluid at birth and undergoes two phases of growth during years 0 – 3 and again at 6 – 12 years.

The frontal sinus is the last sinus to pneumatise; it is formed by the upward movement of anterior ethmoid cells after age 2, growth increases at age 6 and continues until late teenage years.

The sphenoid sinus starts to pneumatise at around 2 years of age and reaches its full size by the late teenage years.

The ethmoid sinuses are present at birth and develop rapidly, continuing to grow and pneumatise until the age of 12.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 88 of 115

Postganglionic parasympathetic fibres are carried to the parotid gland by which of the following nerves:

a Vagus nerve

b Hypoglossal nerve

c Glossopharyngeal nerve

d Auriculotemporal nerve of the mandibular nerve

e Facial nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 88 of 115

Postganglionic parasympathetic fibres are carried to the parotid gland by which of the following nerves:

a) Vagus nerve ✗
b) Hypoglossal nerve
c) Glossopharyngeal nerve
d) Auriculotemporal nerve of the mandibular nerve ✓
e) Facial nerve

Answer

The auriculotemporal nerve carries secretomotor postganglionic parasympathetic fibres to the parotid gland.

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

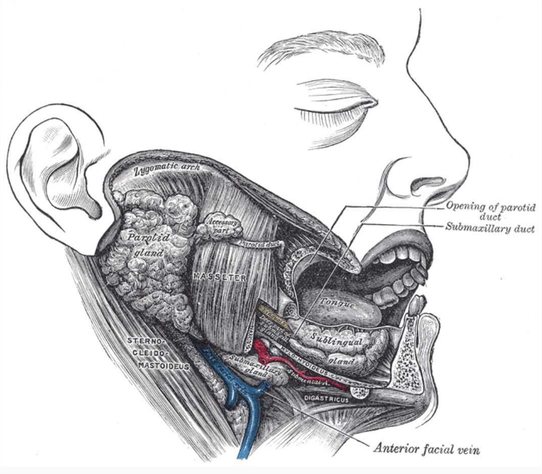
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 89 of 115

The inferior oblique muscle acts to produce which of the following eyeball movements:

a Extorsion

b Depression

c Extorsion, elevation and abduction

d Elevation and abduction

e Extorsion and depression

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 89 of 115

The inferior oblique muscle acts to produce which of the following eyeball movements:

a) Extorsion ✖
b) Depression
c) Extorsion, elevation and abduction ✔
d) Elevation and abduction
e) Extorsion and depression

Answer

The inferior oblique muscle acts to laterally rotate, elevate and abduct the eyeball.

Notes

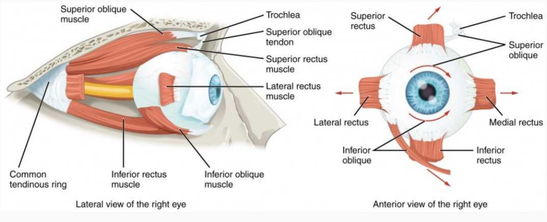
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 90 of 115

A 65 year old female smoker, presents to ED with a 3 month history of an ulcerated lesion on the middle of her lower lip. Biopsy demonstrates a squamous cell carcinoma. Which lymph nodes will most likely first be affected by spread of the malignancy:

a Submandibular nodes

b Parotid nodes

c Submental nodes

d Jugulodigastric nodes

e Jugulo-omohyoid nodes

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 90 of 115

A 65 year old female smoker, presents to ED with a 3 month history of an ulcerated lesion on the middle of her lower lip. Biopsy demonstrates a squamous cell carcinoma. Which lymph nodes will most likely first be affected by spread of the malignancy:

a) **Submandibular nodes** ✗
b) Parotid nodes
c) Submental nodes ✓
d) Jugulodigastric nodes
e) Jugulo-omohyoid nodes

Answer

Submental nodes, inferior and posterior to the chin, drain lymphatics from the medial part of the lower lip and chin bilaterally.

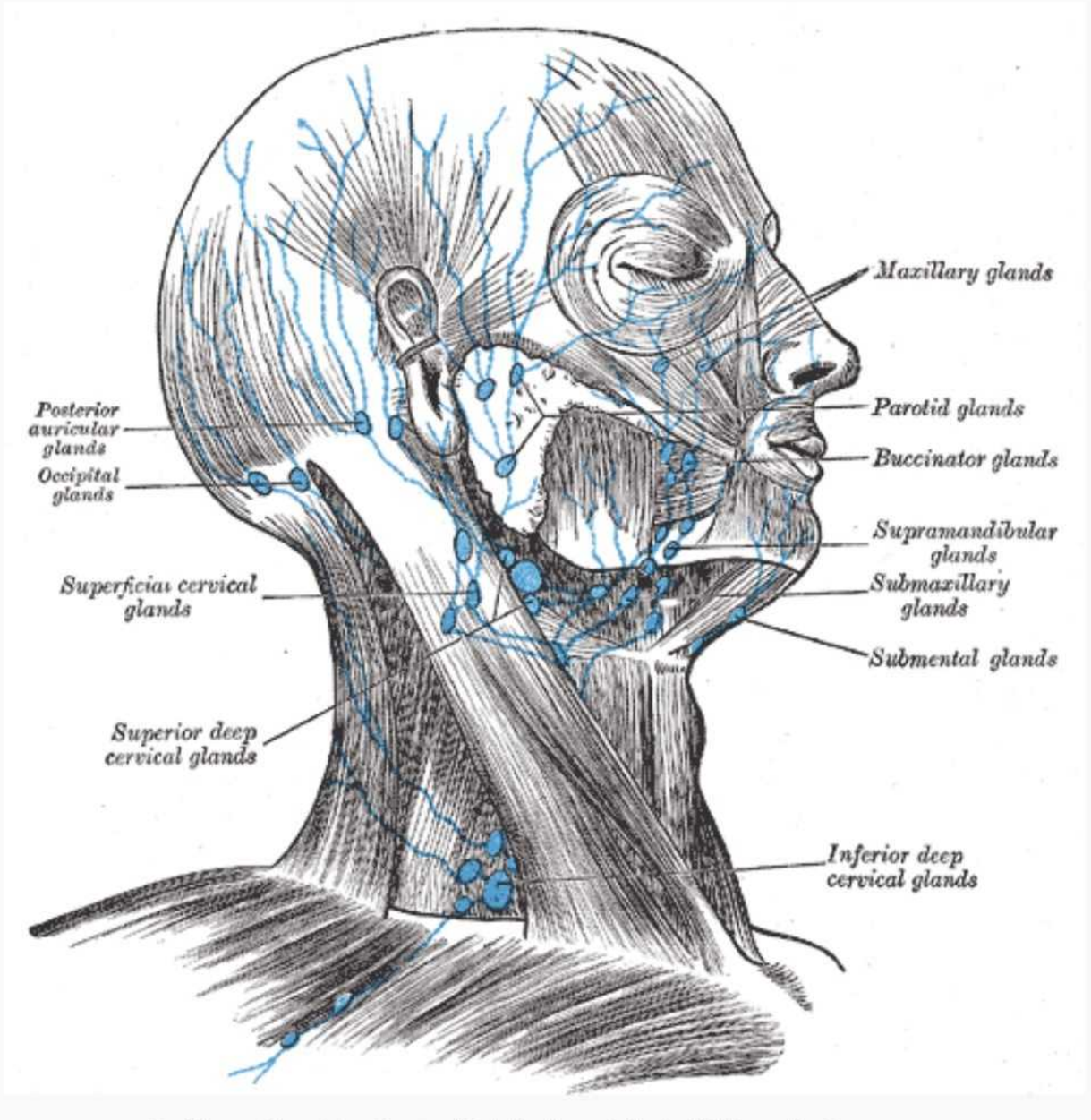
Notes

Lymphatic drainage of the face primarily moves towards three groups of lymph nodes.

Submental nodes, inferior and posterior to the chin, drain lymphatics from the medial part of the lower lip and chin bilaterally (in addition to the tip of the tongue).

Submandibular nodes, superficial to the submandibular gland and inferior to the body of the mandible, drain lymphatics from the medial corner of the orbit, most of the external nose, the medial part of the cheek, the upper lip and the lateral part of the lower lip.

The preauricular and parotid nodes, anterior to the ear, drain lymphatics from most of the eyelids, a part of the external nose and the lateral part of the cheek (in addition to the external acoustic meatus and the posterior orbit).



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 91 of 115

Regarding the parotid glands, which of the following statements is INCORRECT:

a The parotid glands lie anterior to the upper half of the ear.

b Posteriorly the parotid glands are bordered by the sternocleidomastoid muscle.

c Inferiorly the parotid glands are bordered by the lower border of the mandible.

d Superiorly the parotid glands are bordered by the zygomatic arch.

e Anteriorly the parotid glands are bordered by the masseter muscle.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 91 of 115

Regarding the parotid glands, which of the following statements is INCORRECT:

a) **The parotid glands lie anterior to the upper half of the ear.** ✔
b) Posteriorly the parotid glands are bordered by the sternocleidomastoid muscle.
c) Inferiorly the parotid glands are bordered by the lower border of the mandible.
d) Superiorly the parotid glands are bordered by the zygomatic arch.
e) Anteriorly the parotid glands are bordered by the masseter muscle.

Answer

The parotid glands lie anterior to and inferior to the lower half of the ear.

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

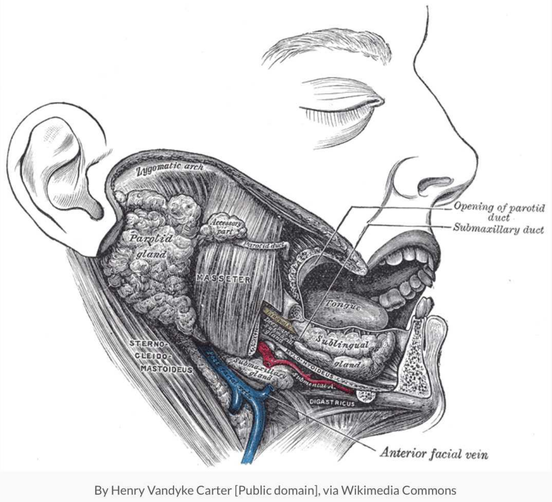
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 92 of 115

Regarding the eyeball, which of the following statements is CORRECT:

a The sclera is the transparent outer layer of the eye.

b The ciliary muscle is innervated by the parasympathetic fibres of the optic nerve.

c The dilator pupillae muscle is innervated by parasympathetic fibres of the oculomotor nerve.

d The fovea centralis is where the optic nerve leaves the retina.

e The choroid is a highly vascular, pigmented layer.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 92 of 115

Regarding the eyeball, which of the following statements is CORRECT:

a) **The sclera is the transparent outer layer of the eye.** ✖
b) The ciliary muscle is innervated by the parasympathetic fibres of the optic nerve.
c) The dilator pupillae muscle is innervated by parasympathetic fibres of the oculomotor nerve.
d) The fovea centralis is where the optic nerve leaves the retina.
e) The choroid is a highly vascular, pigmented layer. ✔

Answer

The choroid is a highly vascular pigmented layer. The optic disc is where the optic nerve leaves the retina. The dilator pupillae muscle is innervated by sympathetic fibres from the superior cervical ganglion. The ciliary muscle is innervated by parasympathetic fibres from the oculomotor nerve. The sclera is the opaque outer layer of the eye.

Notes

The walls of the eyeball consist of three layers:

- the outer fibrous layer of the sclera posteriorly and the cornea anteriorly
- the middle vascular layer of the choroid posteriorly which is continuous with the ciliary body and iris anteriorly
- the inner retina.

The anterior and posterior chambers are the areas posterior to the cornea, and anterior to the lens. The posterior four-fifths of the eyeball, from the lens to the retina, is the vitreous chamber filled with the vitreous body, a transparent gelatinous substance.

Sclera and cornea

The sclera is an opaque white layer of dense connective tissue that provides attachment for the muscles involved in eyeball movement.

The transparent cornea is the anterior protrusion of the eyeball, continuous with the sclera anteriorly and allows light the enter to eyeball.

This outer layer receives its sensory supply from branches of the trigeminal nerve, which acts as the afferent pathway of the corneal blink reflex (the facial nerve is the efferent pathway of the corneal blink reflex, mediated by the orbicularis oculi muscle).

Choroid, lens and ciliary body

The choroid is posterior and represents two-thirds of the vascular layer; it is a thin, highly vascular, pigmented layer firmly attached to the retina internally and loosely attached to the sclera externally.

The ciliary body extends from the anterior border of the choroid and is composed of the ciliary muscle and the ciliary processes, from which extends the lens attached to the suspensory ligament of the lens.

The lens is a transparent, biconvex elastic disc attached to muscles associated with the outer wall of the eyeball, which can change its refractive ability to maintain visual acuity.

Contraction of the ciliary muscle changes the shape of the lens to accommodate the lens for near vision. The ciliary muscle is innervated by parasympathetic fibres of the oculomotor nerve.

Iris and pupil

The iris, the coloured part of the eye with the central opening forming the pupil, projects outwards from the ciliary body. Smooth muscle fibres within the iris control the size of the pupil.

The sphincter pupillae muscle is innervated by parasympathetic fibres of the oculomotor nerve which acts as the efferent pathway of the pupillary light reflex (the optic nerve is the afferent pathway of the pupillary light reflex). Loss of parasympathetic innervation results in a fixed dilated pupil.

The dilator pupillae muscle is innervated by postganglionic sympathetic fibres arising from the superior cervical ganglion. Loss of sympathetic innervation results in a constricted pupil (miosis). Horner's syndrome results from damage to the sympathetic chain and is characterised by the triad of miosis, partial ptosis (due to loss of innervation to the superior tarsal muscle) and anhydrosis.

Chambers

The anterior chamber is the area of the eyeball directly anterior to the iris. Posterior to the iris and anterior to the lens is the smaller posterior chamber. The chambers are continuous with each other through the pupillary opening. They are filled with aqueous humour, which is secreted into the posterior chamber, flows into the anterior chamber and is absorbed into the canal of Schlemm. The aqueous humour supplies nutrients to the avascular cornea and lens and maintains intraocular pressure. If the normal cycle of production and absorption is disturbed, this can cause glaucoma due to raised intraocular pressure.

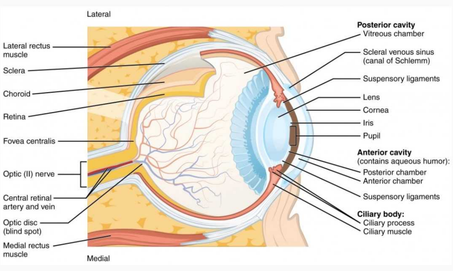
Retina and optic disc

The inner layer of the eyeball is the retina, divided into the posterior optic part and the non-visual part, which covers the internal surface of the ciliary body and the iris.

The optic part of the retina consists of an outer pigmented layer firmly attached to the choroid and the neural layer attached to the pigmented layer around the optic nerve.

The optic disc is where the optic nerve leaves the retina. Lateral to the optic disc, a small area is the macula lutea with its central depression, the fovea centralis. This is the thinnest area of the retina and visual sensitivity is higher here than elsewhere in the retina because it has fewer rods and more cones.

The retina is supplied by the central retinal artery from the ophthalmic artery.



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 93 of 115

The auditory tube connects which of the following structures:

a Nasopharynx and inner ear

b Nasopharynx and middle ear

c External ear and middle ear

d Semicircular canals and the middle ear

e Ossicles and the inner ear

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 93 of 115

The auditory tube connects which of the following structures:

a) Nasopharynx and inner ear ✗
b) Nasopharynx and middle ear ✓
c) External ear and middle ear
d) Semicircular canals and the middle ear
e) Ossicles and the inner ear

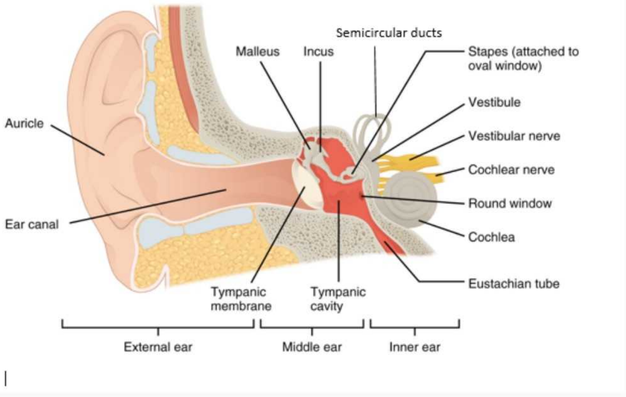
Answer

The pharyngotympanic (auditory) tube connects the middle ear to the nasopharynx.

Notes

The ear is the organ of hearing and balance. It is divided into

- the external ear – consisting of the auricle (pinna) and the external acoustic meatus
- the middle ear – a cavity in the petrous part of the temporal bone bounded laterally by the tympanic membrane and medially by the lateral wall of the internal ear
- the internal ear – a series of cavities within the petrous part of the temporal bone bounded laterally by the middle ear and medially by the internal acoustic meatus.



By OpenStax [CC BY 4.0], via Wikimedia Commons

The middle ear

The middle ear is an air-filled cavity in the petrous temporal bone between the tympanic membrane laterally and the lateral wall of the internal wall medially.

Its basic function is to transmit vibrations of the tympanic membrane across the cavity of the middle ear to the internal ear which it does through three interconnected bones – the malleus (connected to the tympanic membrane), the incus (connected to the malleus) and the stapes (connected to the incus and attached to the lateral wall of the internal ear at the oval window).

The middle ear communicates with the mastoid area posteriorly and the nasopharynx (via the pharyngotympanic tube) anteriorly. The pharyngotympanic tube equalizes pressure on both sides of the tympanic membrane.

The mucous membrane lining the mastoid air cells is continuous with the mucous membranes throughout the middle ear. Therefore infections in the middle ear can easily spread into the mastoid area (and from here to the middle cranial fossa).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 94 of 115

The lateral rectus muscle acts to produce which of the following eyeball movements:

a Elevation

b Depression

c Abduction

d Adduction

e Lateral rotation

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 94 of 115

The lateral rectus muscle acts to produce which of the following eyeball movements:

a) Elevation ✗
b) Depression
c) Abduction ✓
d) Adduction
e) Lateral rotation

Answer

The lateral rectus muscle acts to abduct the eyeball.

Notes

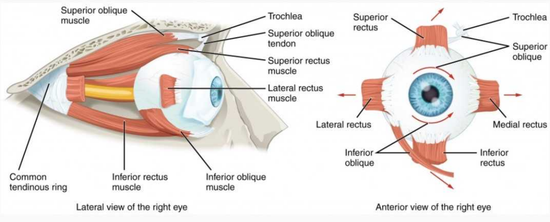
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 95 of 115

Regarding the pterygoid venous plexus, which of the following statements is INCORRECT:

a The pterygoid venous plexus is located in the temporal region, superior to the zygomatic arch.

b The pterygoid plexus connects posteriorly with the retromandibular vein.

c The pterygoid plexus connects anteriorly with the facial vein.

d The inferior ophthalmic veins drain into the pterygoid plexus.

e The pterygoid venous plexus communicates with the cavernous sinus.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 95 of 115

Regarding the pterygoid venous plexus, which of the following statements is INCORRECT:

a)
The pterygoid venous plexus is located in the temporal region, superior to the zygomatic arch.

b) The pterygoid plexus connects posteriorly with the retromandibular vein.

c) The pterygoid plexus connects anteriorly with the facial vein.

d) The inferior ophthalmic veins drain into the pterygoid plexus.

e) The pterygoid venous plexus communicates with the cavernous sinus.

Answer

The pterygoid venous plexus is a network of veins between the medial and lateral pterygoid muscles, and between the lateral pterygoid and temporalis muscles.

Notes

The pterygoid venous plexus is a network of veins between the medial and lateral pterygoid muscles, and between the lateral pterygoid and temporalis muscles.

It receives tributaries from veins draining regions supplied by the maxillary artery (i.e. the nasal cavity, roof and lateral wall of the oral cavity, all teeth, muscles of the infratemporal fossa, paranasal sinuses and nasopharynx). In addition the inferior ophthalmic veins from the orbit can drain through the inferior orbital fissure into the pterygoid plexus.

Small emissary veins often connect the pterygoid plexus in the infratemporal fossa with the cavernous sinus in the cranial cavity. This gives a route of spread of infection into the cranial cavity. Also, as there are no valves in the veins of the head and neck, anaesthetic inadvertently injected under pressure into the veins of the pterygoid plexus can backflow into tissues or into the cranial cavity.

The pterygoid plexus connects posteriorly with the retromandibular vein in the neck (via a short maxillary vein) and anteriorly with the facial vein on the face (via a deep facial vein).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 96 of 115

Regarding the nerve supply of the oral cavity, which of the following statements is CORRECT:

a All of the muscles of the tongue are innervated by the hypoglossal nerve.

b All of the muscles of the soft palate are innervated by the vagus nerve.

c The mylohyoid muscle is innervated by the vagus nerve.

d Sympathetic fibres to the oral cavity arise from spinal cord segment T1.

e Parasympathetic fibres to the glands within the oral cavity are carried by branches of the glossopharyngeal nerve.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 96 of 115

Regarding the nerve supply of the oral cavity, which of the following statements is CORRECT:

a) **All of the muscles of the tongue are innervated by the hypoglossal nerve.** ✖

b) All of the muscles of the soft palate are innervated by the vagus nerve.

c) The mylohyoid muscle is innervated by the vagus nerve.

d) Sympathetic fibres to the oral cavity arise from spinal cord segment T1. ✔

e) Parasympathetic fibres to the glands within the oral cavity are carried by branches of the glossopharyngeal nerve.

Answer

Sympathetic fibres in the oral cavity come from the superior cervical ganglion (arising from spinal cord level T1) and are distributed to the oral cavity along branches of the trigeminal nerve.

Notes

General sensory innervation of the oral cavity is carried predominantly by branches of the trigeminal nerve. The **upper parts of the cavity**, including the palate and upper teeth are innervated by branches of the **maxillary nerve**. The **lower parts of the cavity**, including the lower teeth and anterior two-thirds of the tongue are innervated by branches of the **mandibular nerve**.

Taste from the **anterior two-thirds of the tongue** is carried by the **chorda tympani** (branch of the facial nerve).

Taste and **sensation** from the **posterior third** of the tongue is carried by the **glossopharyngeal nerve**.

Parasympathetic fibres to the glands within the oral cavity are carried by branches of the **facial nerve**, which are distributed with branches of the trigeminal nerve.

Sympathetic fibres in the oral cavity come from the **superior cervical ganglion** (arising from spinal cord level T1) and are distributed to the oral cavity along branches of the trigeminal nerve.

All **muscles of the tongue** are innervated by the **hypoglossal nerve**, except for the **palatoglossus**, which is innervated by the **vagus nerve**.

All **muscles of the soft palate** are innervated by the **vagus nerve**, except for the **tensor veli palatini**, which is innervated by a branch of the **mandibular nerve**.

The **mylohyoid**, which forms the floor of the oral cavity is also innervated by the **mandibular nerve** (inferior alveolar branch).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 97 of 115

The superior tarsal muscle is innervated by which of the following:

a Sympathetic fibres

b Facial nerve

c Ophthalmic nerve

d Optic nerve

e Oculomotor nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 97 of 115

The superior tarsal muscle is innervated by which of the following:

a) **Sympathetic fibres** ✔
b) Facial nerve
c) Ophthalmic nerve
d) Optic nerve
e) Oculomotor nerve

Answer

The superior tarsal muscle is a collection of smooth muscle fibres in companion with the levator palpebrae superioris, innervated by postganglionic sympathetic fibres from the superior cervical ganglion which helps to maintain upper eyelid opening.

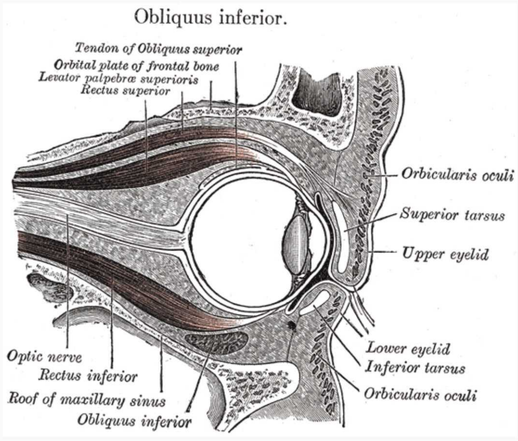
Notes

The upper and lower eyelids are anterior structures that protect the eyeball when closed. The space between the eyelids is the palpebral fissure.

The layers of the eyelids consist of (from anterior to posterior)

- skin
- subcutaneous tissue
- voluntary muscle
- the orbital septum (an extension of periosteum which attaches to the tarsus)
- the tarsus (a plate of dense connective tissue which provide the major support for the eyelid)
- conjunctiva (a thin membrane, composed primarily of stratified squamous epithelium, which covers the posterior surface of each eyelid before reflecting onto the sclera of the eyeball).

The upper and lower eyelids are basically the same, except for the addition of two muscles in the upper eyelid (the levator palpebrae superioris and the superior tarsal muscle).



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

Muscles

The orbicularis oculi muscle is innervated by the facial nerve and closes the eyelids. Loss of function of the orbicularis oculi causes an inability to close the eyelids tightly and a drooping of the lower eyelid (ectropion) resulting in spillage of tears. This leads to drying of the cornea, with subsequent ulceration and secondary infection.

The levator palpebrae superioris muscle originates from the roof of the orbit and inserts into the superior tarsus, is innervated by the oculomotor nerve and raises the upper eyelid. The superior tarsal muscle is a collection of smooth muscle fibres in companion with the levator palpebrae superioris, innervated by postganglionic sympathetic fibres from the superior cervical ganglion which helps to maintain upper eyelid opening. Loss of function of the levator palpebrae superioris or the superior tarsal muscle results in a complete or partial ptosis respectively.

Innervation

The sensory innervation of the eyelids and conjunctiva is from:

- the supraorbital nerve (ophthalmic nerve)
- the supratrochlear (ophthalmic nerve)
- the infratrochlear nerve (ophthalmic nerve)
- lacrimal branches (ophthalmic nerve)
- the infraorbital nerve (maxillary nerve).

Glands

Embedded in the tarsal plates are modified sebaceous tarsal glands (Meibomian glands) which empty an oily substance onto the free margin of each eyelid that increases the viscosity of tears and decreases the rate of evaporation of tears from the surface of the eyeball.

Blockage and inflammation of a tarsal gland is a chalazion and is on the inner surface of the eyelid. External sebaceous and sweat glands associated with the eyelash follicles may also become blocked and inflamed causing a stye on the edge of the eyelid.

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 98 of 115

Regarding the nerve supply of the oral cavity, which of the following statements is CORRECT:

a The palate and upper teeth are innervated by branches of the mandibular nerve.

b Taste from the anterior two-thirds of the tongue is carried by branches of the mandibular nerve.

c Sensation from the posterior one-third of the tongue is carried by the chorda tympani.

d Parasympathetic fibres to the glands within the oral cavity are carried by branches of the facial nerve.

e The palatoglossus muscle is innervated by the glossopharyngeal nerve.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 98 of 115

Regarding the nerve supply of the oral cavity, which of the following statements is CORRECT:

a) **The palate and upper teeth are innervated by branches of the mandibular nerve.** ✗

b) Taste from the anterior two-thirds of the tongue is carried by branches of the mandibular nerve.

c) Sensation from the posterior one-third of the tongue is carried by the chorda tympani.

d) ✓
Parasympathetic fibres to the glands within the oral cavity are carried by branches of the facial nerve.

e) The palatoglossus muscle is innervated by the glossopharyngeal nerve.

Answer

Parasympathetic fibres to the glands within the oral cavity are carried by branches of the facial nerve, which are distributed with branches of the trigeminal nerve.

Notes

General sensory innervation of the oral cavity is carried predominantly by branches of the trigeminal nerve. The **upper parts of the cavity**, including the palate and upper teeth are innervated by branches of the **maxillary nerve**. The **lower parts of the cavity**, including the lower teeth and anterior two-thirds of the tongue are innervated by branches of the **mandibular nerve**.

Taste from the **anterior two-thirds of the tongue** is carried by the **chorda tympani** (branch of the facial nerve).

Taste and **sensation** from the **posterior third** of the tongue is carried by the **glossopharyngeal nerve**.

Parasympathetic fibres to the glands within the oral cavity are carried by branches of the **facial nerve**, which are distributed with branches of the trigeminal nerve.

Sympathetic fibres in the oral cavity come from the **superior cervical ganglion** (arising from spinal cord level T1) and are distributed to the oral cavity along branches of the trigeminal nerve.

All **muscles of the tongue** are innervated by the **hypoglossal nerve**, except for the **palatoglossus**, which is innervated by the **vagus nerve**.

All **muscles of the soft palate** are innervated by the **vagus nerve**, except for the **tensor veli palatini**, which is innervated by a branch of the **mandibular nerve**.

The **mylohyoid**, which forms the floor of the oral cavity is also innervated by the **mandibular nerve** (inferior alveolar branch).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 99 of 115

Regarding the palate, which of the following statements is CORRECT:

a The blood supply to the palate is derived from branches of the internal carotid artery.

b Lymphatic vessels from the palate usually drain into deep cervical lymph nodes.

c The sensory supply to the palate is primarily from branches of the mandibular nerve.

d The soft palate is continuous with the hard palate posteriorly.

e The anterior hard palate is formed by the palatine bones.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 99 of 115

Regarding the palate, which of the following statements is CORRECT:

a) ✖
The blood supply to the palate is derived from branches of the internal carotid artery.

b) Lymphatic vessels from the palate usually drain into deep cervical lymph nodes. ✔

c) The sensory supply to the palate is primarily from branches of the mandibular nerve.

d) The soft palate is continuous with the hard palate posteriorly.

e) The anterior hard palate is formed by the palatine bones.

Answer

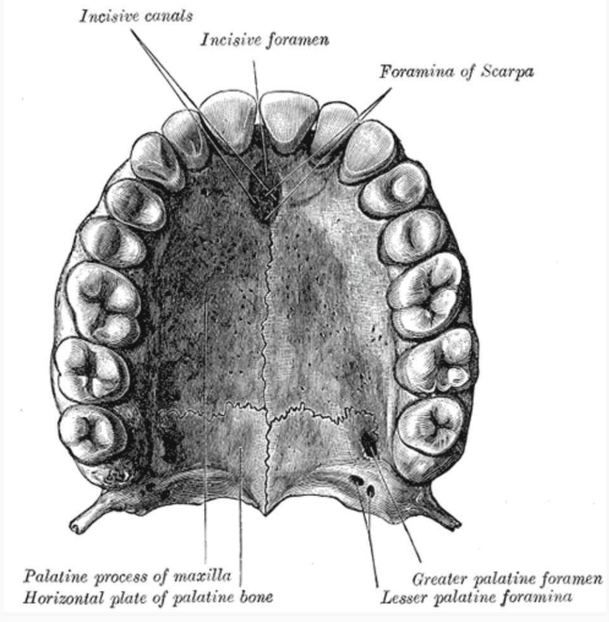
Lymphatic vessels from the palate drain into the deep cervical nodes.

Notes

The roof of the oral cavity consists of the palate – the anterior hard palate and the posterior soft palate. The hard palate separates the oral cavity from the nasal cavities.

The anterior three-quarters of the hard palate are formed by the palatine processes of the maxillae and the posterior one-quarter is formed by the horizontal plates of the palatine bones.

In the oral cavity, the hard palate is bordered by the upper alveolar arch anteriorly and laterally. Posteriorly the hard palate is continuous with the soft palate.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

The blood supply to the palate is derived from branches from the external carotid artery: the greater palatine branch of the maxillary artery, the ascending palatine branch of the facial artery and the palatine branch of the ascending pharyngeal artery.

Lymphatic vessels from the palate drain into the deep cervical nodes.

The palate is supplied by the greater and lesser palatine nerves and the nasopalatine nerve (general sensory fibres carried in all these nerves originate in the pterygopalatine fossa from the maxillary nerve).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 100 of 115

The skin in the area of the lateral angle of the eye is primarily supplied by which of the following nerves:

a Lacrimal nerve

b Infratrochlear nerve

c Supraorbital nerve

d Supratrochlear nerve

e Infraorbital nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 100 of 115

The skin in the area of the lateral angle of the eye is primarily supplied by which of the following nerves:

a) **Lacrimal nerve** ✔
b) Infratrochlear nerve
c) Supraorbital nerve
d) Supratrochlear nerve
e) Infraorbital nerve

Answer

The lacrimal nerve, branch of the ophthalmic nerve, innervates the lateral half of the upper eyelid and the skin in the area of the lateral angle.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

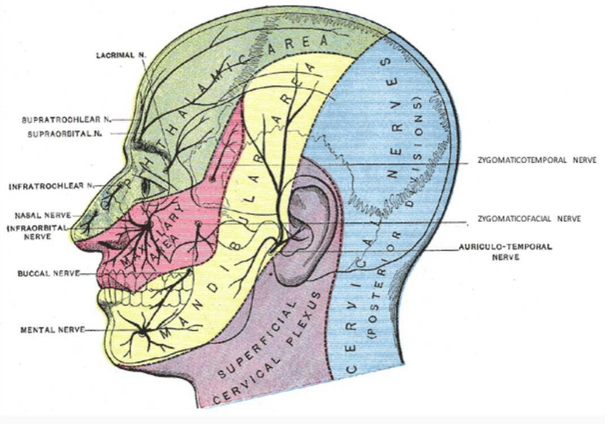
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 101 of 115

A 28 year old woman complains of dryness of the nose and the palate. A lesion is most likely affecting which of the following ganglia:

a Otic ganglion

b Submandibular ganglion

c Ciliary ganglion

d Pterygopalatine ganglion

e Stellate ganglion

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 101 of 115

A 28 year old woman complains of dryness of the nose and the palate. A lesion is most likely affecting which of the following ganglia:

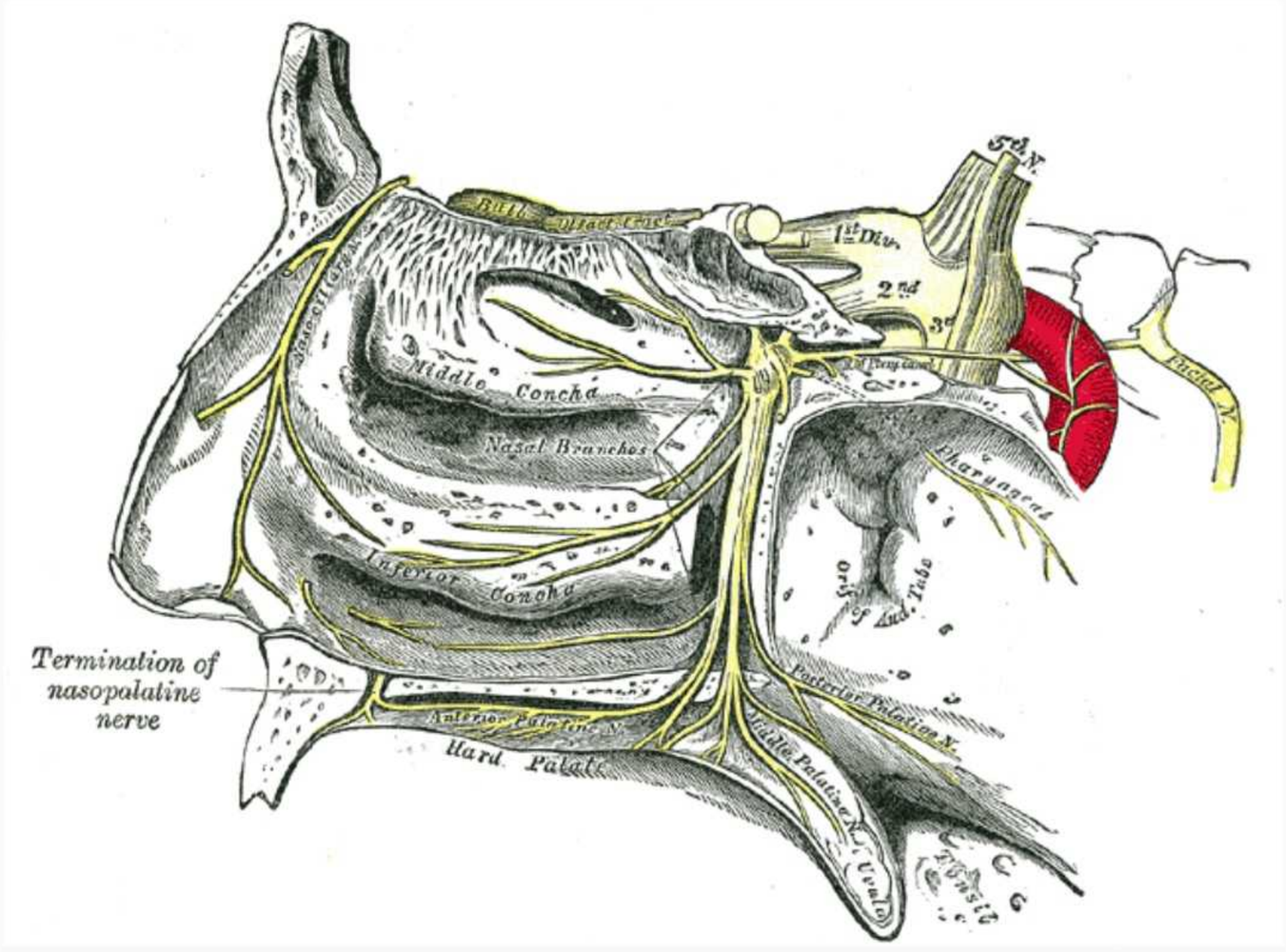
a) Otic ganglion ✗
b) Submandibular ganglion
c) Ciliary ganglion
d) Pterygopalatine ganglion ✓
e) Stellate ganglion

Answer

Postganglionic secretomotor parasympathetic fibres originating in the pterygopalatine ganglion innervates glands in the palate and nasal mucosa. Postganglionic parasympathetic fibres from the otic ganglion supply the parotid gland, from the submandibular ganglion supply the submandibular and sublingual glands and from the ciliary ganglion supply the ciliary muscle and sphincter pupillae.

Notes

The pterygopalatine ganglion sits in the pterygopalatine fossa. It receives preganglionic parasympathetic fibres from the facial nerve (via the greater petrosal nerve). It also receives postganglionic sympathetic fibres originating from the T1 spinal cord. Postganglionic parasympathetic fibres, arising in the pterygopalatine ganglion, join the general sensory branches of the maxillary nerve, as do the postganglionic sympathetic fibres. The three types of fibres leave the ganglion to supply the nose and palate by way of branches of the maxillary nerve.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 102 of 115

The soft palate receives its sensory innervation from which of the following nerves:

a Facial nerve

b Maxillary nerve

c Mandibular nerve

d Glossopharyngeal nerve

e Vagus nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 102 of 115

The soft palate receives its sensory innervation from which of the following nerves:

a) Facial nerve ✗
b) Maxillary nerve ✓
c) Mandibular nerve
d) Glossopharyngeal nerve
e) Vagus nerve

Answer

The palate is supplied by the greater and lesser palatine nerves and the nasopalatine nerve (general sensory fibres carried in all these nerves originate in the pterygopalatine fossa from the maxillary nerve).

Notes

The soft palate continues posteriorly from the hard palate and acts as a valve that can be:

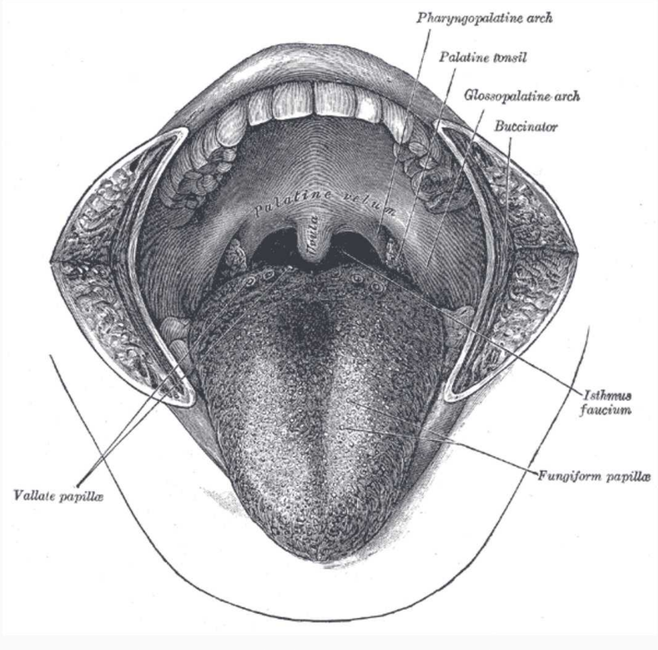
- depressed to help close the oropharyngeal isthmus and seal off the oral cavity from the oropharynx
- elevated to separate the nasopharynx from the oropharynx.

The soft palate is formed and moved by five paired muscles. The small muscular projection that hangs from the posterior free margin of the soft palate is the uvula.

All of the muscles of the soft palate are innervated by the vagus nerve (from the pharyngeal plexus), except for the tensor veli palatini, which is innervated by a branch of the mandibular nerve. Normally, the palate elevates evenly in the midline. In a palsy of the vagus nerve, the uvula will deviate away from the affected side.

The palate is supplied by the greater and lesser palatine nerves and the nasopalatine nerve (general sensory fibres carried in all these nerves originate in the pterygopalatine fossa from the maxillary nerve).

Parasympathetic fibres to glands and special afferent fibres carrying taste from the soft palate are carried in the facial nerve and join the nerves in the pterygopalatine fossa, as do the sympathetic fibres, ultimately derived from the T1 spinal cord level.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 103 of 115



The hard palate is formed anteriorly by which of the following bones:

a Mandible

b Palatine bone

c Maxilla

d Zygomatic bone

e Sphenoid bone

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 103 of 115

The hard palate is formed anteriorly by which of the following bones:

a) Mandible ✗
b) Palatine bone
c) Maxilla ✓
d) Zygomatic bone
e) Sphenoid bone

Answer

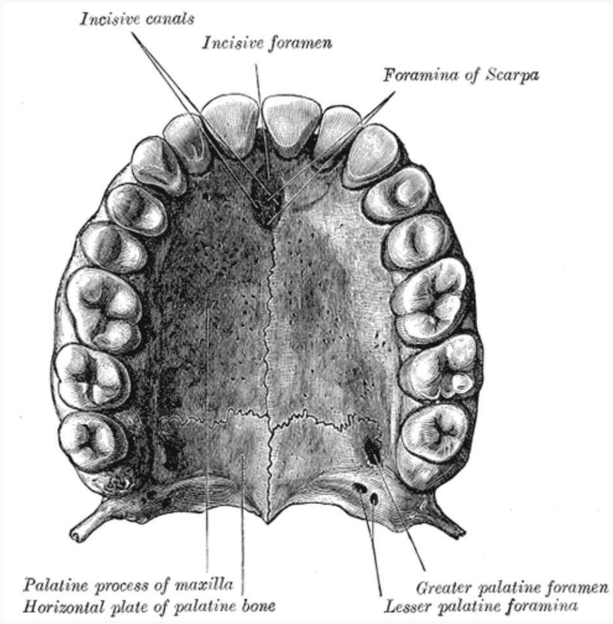
The anterior three-quarters of the hard palate are formed by the palatine processes of the maxillae and the posterior one-quarter is formed by the horizontal plates of the palatine bones.

Notes

The roof of the oral cavity consists of the palate – the anterior hard palate and the posterior soft palate. The hard palate separates the oral cavity from the nasal cavities.

The anterior three-quarters of the hard palate are formed by the palatine processes of the maxillae and the posterior one-quarter is formed by the horizontal plates of the palatine bones.

In the oral cavity, the hard palate is bordered by the upper alveolar arch anteriorly and laterally. Posteriorly the hard palate is continuous with the soft palate.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

The blood supply to the palate is derived from branches from the external carotid artery: the greater palatine branch of the maxillary artery, the ascending palatine branch of the facial artery and the palatine branch of the ascending pharyngeal artery.

Lymphatic vessels from the palate drain into the deep cervical nodes.

The palate is supplied by the greater and lesser palatine nerves and the nasopalatine nerve (general sensory fibres carried in all these nerves originate in the pterygopalatine fossa from the maxillary nerve).

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 104 of 115

Which of the following best describe the territory of the lymphatic drainage of the submental lymph nodes:

a Lateral part of upper lip and lateral cheek

b Upper lip and lateral part of lower lip

c Medial lower lip and chin

d Medial part of upper lip and most of external nose

e Upper lip, lower lip and medial cheek

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 104 of 115

Which of the following best describe the territory of the lymphatic drainage of the submental lymph nodes:

a) **Lateral part of upper lip and lateral cheek** ✗
b) Upper lip and lateral part of lower lip
c) Medial lower lip and chin ✓
d) Medial part of upper lip and most of external nose
e) Upper lip, lower lip and medial cheek

Answer

Submental nodes, inferior and posterior to the chin, drain lymphatics from the medial part of the lower lip and chin bilaterally.

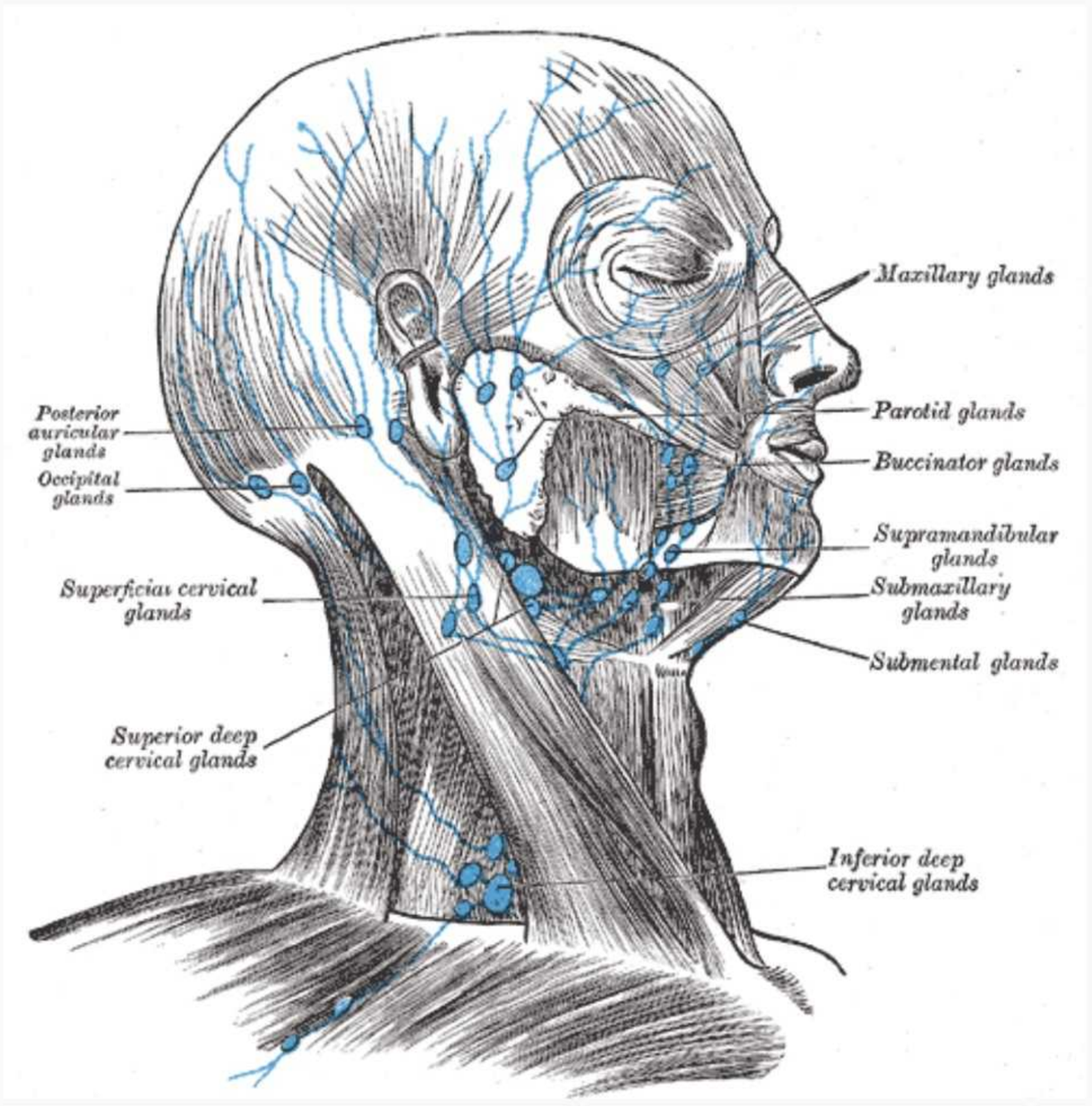
Notes

Lymphatic drainage of the face primarily moves towards three groups of lymph nodes.

Submental nodes, inferior and posterior to the chin, drain lymphatics from the medial part of the lower lip and chin bilaterally (in addition to the tip of the tongue).

Submandibular nodes, superficial to the submandibular gland and inferior to the body of the mandible, drain lymphatics from the medial corner of the orbit, most of the external nose, the medial part of the cheek, the upper lip and the lateral part of the lower lip.

The preauricular and parotid nodes, anterior to the ear, drain lymphatics from most of the eyelids, a part of the external nose and the lateral part of the cheek (in addition to the external acoustic meatus and the posterior orbit).



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 105 of 115

The medial pterygoid primarily acts to produce which of the following movements:

a Protrusion of the mandible

b Retraction of the mandible

c Elevation of the mandible

d Depression of the mandible

e Depression and protrusion of the mandible

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 105 of 115

The medial pterygoid primarily acts to produce which of the following movements:

a) **Protrusion of the mandible** ✗
b) Retraction of the mandible
c) Elevation of the mandible ✓
d) Depression of the mandible
e) Depression and protrusion of the mandible

Answer

The medial pterygoid mainly elevates the mandible but also assists the lateral pterygoid in protruding the lower jaw.

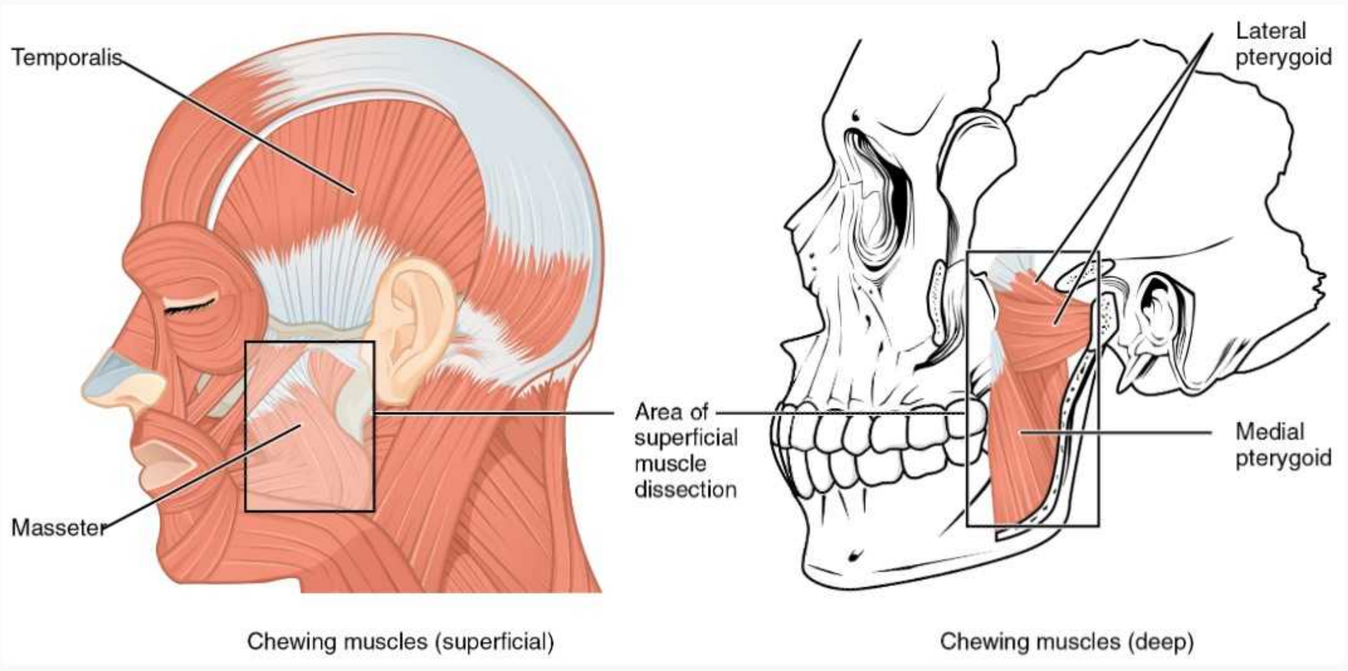
Notes

The lateral pterygoid is the main muscle responsible for protrusion of the lower jaw and also assists in depression of the mandible.

The medial pterygoid mainly elevates the mandible but also assists the lateral pterygoid in protruding the lower jaw.

When the lateral and medial pterygoid muscles contract on only one side, the chin moves to the opposite side. When opposite movements at the two TMJs are coordinated, a chewing movement results.

Both the medial and lateral pterygoids are innervated by the mandibular division of the trigeminal nerve.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 106 of 115

Depression of the eyeball is primarily produced by which of the following muscles:

a Superior rectus and superior oblique

b Inferior rectus and superior oblique

c Superior rectus and inferior oblique

d Inferior rectus and inferior oblique

e Inferior rectus and lateral rectus

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 106 of 115

Depression of the eyeball is primarily produced by which of the following muscles:

a) **Superior rectus and superior oblique** ✗
b) Inferior rectus and superior oblique ✓
c) Superior rectus and inferior oblique
d) Inferior rectus and inferior oblique
e) Inferior rectus and lateral rectus

Answer

Depression of the eyeball is produced by the inferior rectus and the superior oblique muscles.

Notes

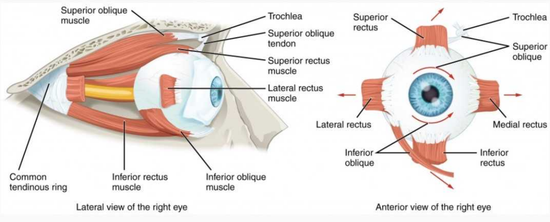
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 107 of 115

A 28 year old man presents to ED with pain and blurred vision after being hit in the eye with a fast-moving ball while playing squash. Imaging shows a blow-out fracture of the inferior wall of the orbit. The patient is unable to look upwards with the affected eye. Which of the following muscles is most likely responsible for this finding:

a Superior oblique

b Superior rectus

c Inferior rectus

d Inferior oblique

e Levator palpebrae superioris

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 107 of 115

A 28 year old man presents to ED with pain and blurred vision after being hit in the eye with a fast-moving ball while playing squash. Imaging shows a blow-out fracture of the inferior wall of the orbit. The patient is unable to look upwards with the affected eye. Which of the following muscles is most likely responsible for this finding:

a) **Superior oblique** ✖
b) Superior rectus
c) Inferior rectus ✔
d) Inferior oblique
e) Levator palpebrae superioris

Answer

The inferior oblique and the superior rectus (both innervated by the oculomotor nerve) are normally responsible for elevation of the eyeball, but the finding in this case is not due to nerve damage or paralysis of the extraocular muscles.

The inferior rectus muscle originates from the inferior part of the common tendinous ring and inserts on the inferior anterior part of the eyeball. A blow-out fracture of the inferior wall of the orbit will likely entrap and tether the inferior rectus muscle between fragments of the broken orbital plate of the maxilla. The inferior rectus thus acts as an anchor on the eyeball, preventing upward movement of the eye.

Notes

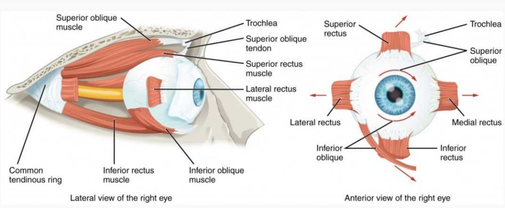
There are six extraocular eye muscles which act to turn or rotate the eye about its vertical, horizontal, and anteroposterior axes.

Action	Description	Primary muscle(s)
Elevation	Moving pupil superiorly	Superior rectus and inferior oblique
Depression	Moving pupil inferiorly	Inferior rectus and superior oblique
Abduction	Moving pupil laterally	Lateral rectus
Adduction	Moving pupil medially	Medial rectus
Medial rotation (intorsion)	Rotating upper part of pupil medially towards nose	Superior oblique
Lateral rotation (extorsion)	Rotating upper part of pupil laterally towards temple	Inferior oblique

The recti muscles all originate as a group from a common tendinous ring at the apex of the orbit and form a cone of muscles as they pass forward to their attachment on the eyeball.

To test the muscles in isolation, the patient can be asked to move their eyeball in certain directions. A lateral position of the eyeball is necessary for testing the inferior and superior recti, whereas a medial position is necessary for testing the inferior and superior oblique. This first movement (laterally or medially) brings the axis of the eyeball into alignment with the axis of the muscle. If the extraocular muscle being tested is paralysed, the patient will be unable to perform the movement and will complain of diplopia in that direction.

Extraocular muscle	Innervation	Movement of eyeball	Assessment
Superior rectus	Oculomotor nerve	Elevation, adduction and medial rotation	Look out and up
Inferior rectus	Oculomotor nerve	Depression, adduction and lateral rotation	Look out and down
Medial rectus	Oculomotor nerve	Adduction	Look in (in horizontal plane)
Lateral rectus	Abducens nerve	Abduction	Look out (in horizontal plane)
Superior oblique	Trochlear nerve	Medial rotation, depression and abduction	Look in and down
Inferior oblique	Oculomotor nerve	Lateral rotation, elevation and abduction	Look in and up



By OpenStax College [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 108 of 115

Sensory innervation of the parotid gland is provided by which of the following nerves:

a Facial nerve

b Zygomaticofacial nerve of the maxillary nerve

c Infraorbital nerve of the maxillary nerve

d Buccal nerve of the mandibular nerve

e Auriculotemporal nerve of the mandibular nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 108 of 115

Sensory innervation of the parotid gland is provided by which of the following nerves:

a) Facial nerve ✖
b) Zygomaticofacial nerve of the maxillary nerve
c) Infraorbital nerve of the maxillary nerve
d) Buccal nerve of the mandibular nerve
e) Auriculotemporal nerve of the mandibular nerve ✔

Answer

Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

Notes

The parotid glands are the largest of the paired salivary glands and are enclosed within the split investing layer of the deep cervical fascia. The parotid glands produce a watery saliva and salivary amylase required for food bolus formation and oral digestion.

Anatomical location

They are anterior to and inferior to the lower half of the ear. They extend down to the lower border of the mandible and up to the zygomatic arch. Posteriorly they cover the anterior part of the sternocleidomastoid and continue anteriorly to halfway across the masseter muscle.

Parotid duct

The parotid duct leaves the anterior edge of the parotid gland midway between the zygomatic arch and the corner of the mouth. It traverses the masseter muscle and after crossing the medial border of the masseter, turns deeply into the buccal fat pad and pierces the buccinator muscle. It opens into the oral cavity near the second upper molar tooth.

Important relationships

Several major structures enter and pass through or just deep to the parotid gland including:

- The facial nerve (and its five terminal branches arising within the parotid gland)
- The external carotid artery (and its branches arising within the parotid gland – the posterior auricular artery and its terminal branches the maxillary and superficial temporal artery)
- The retromandibular vein (formed within the parotid gland from the union of the superficial temporal and maxillary vein).

Nerve supply

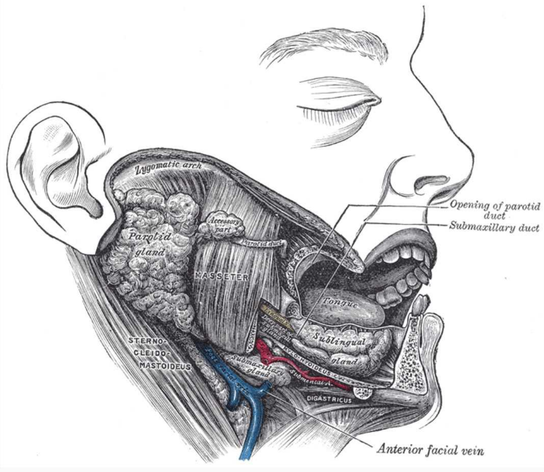
Sensory innervation of the parotid gland is provided by the auriculotemporal nerve (branch of the mandibular nerve).

The auriculotemporal nerve also carries secretomotor parasympathetic fibres to the parotid gland; these postganglionic parasympathetic fibres have their origin in the otic ganglion (just inferior to the foramen ovale) which receives preganglionic parasympathetic fibres from the glossopharyngeal nerve.

Sympathetic innervation originates from the superior cervical ganglion.

Clinical implications

Parotitis refers to inflammation of the parotid gland, usually as a result of an infection. The parotid gland is enclosed in a tough fibrous capsule which limits swelling of the gland, resulting in pain which may be referred to the external ear.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 109 of 115

Regarding the teeth, which of the following statements is CORRECT:

a Adults normally have 30 teeth.

b Permanent teeth usually replace deciduous teeth at around 3 years old.

c The lower teeth are innervated by the lingual nerve.

d Adults normally have two premolar and three molar teeth in each quadrant.

e The upper teeth are innervated by the inferior alveolar nerve.

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 109 of 115

Regarding the teeth, which of the following statements is CORRECT:

a) **Adults normally have 30 teeth.** ✖
b) Permanent teeth usually replace deciduous teeth at around 3 years old.
c) The lower teeth are innervated by the lingual nerve.
d) Adults normally have two premolar and three molar teeth in each quadrant. ✔
e) The upper teeth are innervated by the inferior alveolar nerve.

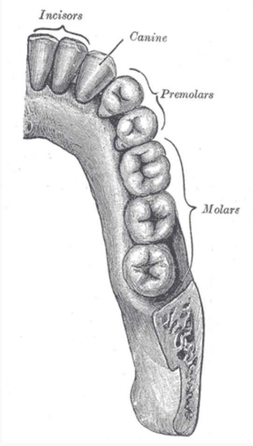
Answer

In adults, there are 32 teeth, 16 in the upper jaw and 16 in the lower jaw. On each side in both upper and lower arches, there are two incisors, one canine, two premolars and three molar teeth.

Notes

The teeth are attached to sockets in the upper alveolar arch on the maxilla and the lower alveolar arch on the mandible. The gingivae are specialised regions of oral mucosa that surround the teeth and cover adjacent regions of the alveolar bone.

In adults, there are 32 teeth, 16 in the upper jaw and 16 in the lower jaw. On each side in both upper and lower arches, there are two incisors, one canine, two premolars and three molar teeth. Two successive sets of teeth develop in humans; deciduous teeth emerging between six months and two years of age, and permanent teeth, which begin to emerge and replace the deciduous teeth at around age six years.

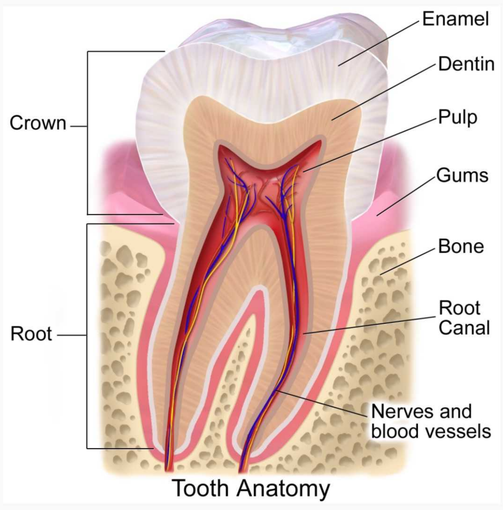


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

All nerves that innervate the teeth and gingivae are branches of the trigeminal nerve. The lower teeth are innervated by the inferior alveolar nerve (branch of the mandibular nerve). The upper teeth are innervated by the anterior, middle and posterior superior alveolar nerves (branches of the maxillary nerve).

Anaesthesia of the inferior alveolar nerve can be performed by placing the needle lateral to the anterior arch of the fauces (palatoglossal arch) in the oral cavity and advancing along the medial border around the inferior third of the ramus of the mandible. It is also possible to anaesthetise the infraorbital and buccal nerves.

The portion of the tooth exposed to the oral cavity is the dental crown, and the portion below the dental crown is the tooth root. The dental pulp cavity exists in the centre of the tooth containing the pulp which consist of blood vessels, lymph vessels and nerve fibres.



Blausen.com staff. "Blausen gallery 2014". Wikiversity Journal of Medicine. DOI:10.15347/wjm/2014.010. ISSN 20018762. (Own work) [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 110 of 115

The skin over the posterior temple and scalp anterior to the ear is primarily supplied by which of the following nerves:

a Greater occipital nerve

b Great auricular nerve

c Supraorbital nerve

d Auriculotemporal nerve

e Zygomaticotemporal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 110 of 115

The skin over the posterior temple and scalp anterior to the ear is primarily supplied by which of the following nerves:

a) Greater occipital nerve ✖
b) Great auricular nerve
c) Supraorbital nerve
d) Auriculotemporal nerve ✔
e) Zygomaticotemporal nerve

Answer

The auriculotemporal nerve, branch of the mandibular nerve, innervates the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

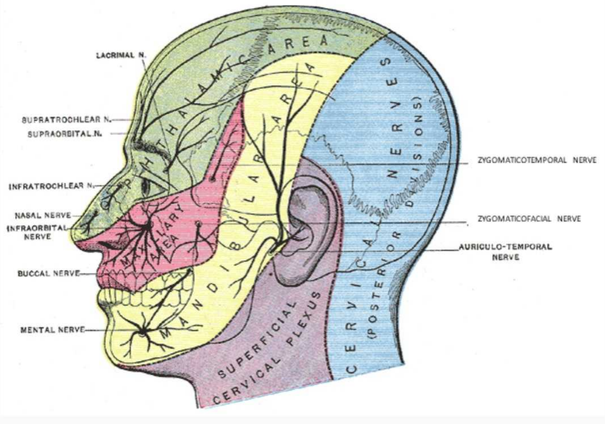
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 111 of 115

An 18 year old student presents to ED with dental pain. She is found to have tooth decay affecting one of the right lower molar teeth. Which of the following nerves would need to be anaesthetised to treat the tooth decay:

a Mental nerve

b Lingual nerve

c Inferior alveolar nerve

d Buccal nerve

e Auriculotemporal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 111 of 115

An 18 year old student presents to ED with dental pain. She is found to have tooth decay affecting one of the right lower molar teeth. Which of the following nerves would need to be anaesthetised to treat the tooth decay:

a) Mental nerve ✗
b) Lingual nerve
c) Inferior alveolar nerve ✓
d) Buccal nerve
e) Auriculotemporal nerve

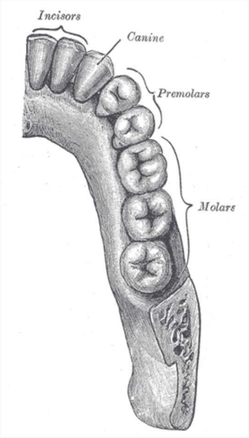
Answer

The inferior alveolar nerve, branch of the mandibular nerve, supplies sensory innervation to the mandibular teeth.

Notes

The teeth are attached to sockets in the upper alveolar arch on the maxilla and the lower alveolar arch on the mandible. The gingivae are specialised regions of oral mucosa that surround the teeth and cover adjacent regions of the alveolar bone.

In adults, there are 32 teeth, 16 in the upper jaw and 16 in the lower jaw. On each side in both upper and lower arches, there are two incisors, one canine, two premolars and three molar teeth. Two successive sets of teeth develop in humans; deciduous teeth emerging between six months and two years of age, and permanent teeth, which begin to emerge and replace the deciduous teeth at around age six years.

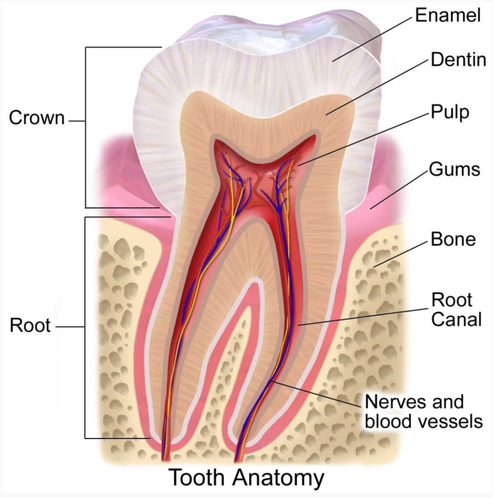


By Henry Vandyke Carter [Public domain], via Wikimedia Commons

All nerves that innervate the teeth and gingivae are branches of the trigeminal nerve. The lower teeth are innervated by the inferior alveolar nerve (branch of the mandibular nerve). The upper teeth are innervated by the anterior, middle and posterior superior alveolar nerves (branches of the maxillary nerve).

Anaesthesia of the inferior alveolar nerve can be performed by placing the needle lateral to the anterior arch of the fauces (palatoglossal arch) in the oral cavity and advancing along the medial border around the inferior third of the ramus of the mandible. It is also possible to anaesthetise the infraorbital and buccal nerves.

The portion of the tooth exposed to the oral cavity is the dental crown, and the portion below the dental crown is the tooth root. The dental pulp cavity exists in the centre of the tooth containing the pulp which consist of blood vessels, lymph vessels and nerve fibres.



Blausen.com staff. "Blausen gallery 2014". Wikiversity Journal of Medicine. DOI:10.15347/wjm/2014.010. ISSN 20018762. (Own work) [CC BY 3.0], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 112 of 115

Submandibular lymph nodes drain lymph from all of the following regions EXCEPT for:

a Medial corner of the orbit

b Most of the external nose

c Chin

d Medial part of the cheek

e Upper and lower lip

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 112 of 115

Submandibular lymph nodes drain lymph from all of the following regions EXCEPT for:

a) **Medial corner of the orbit** ✗
b) Most of the external nose
c) Chin ✓
d) Medial part of the cheek
e) Upper and lower lip

Answer

Submandibular nodes drain lymphatics from the medial corner of the orbit, most of the external nose, the medial part of the cheek, the upper lip and the lateral part of the lower lip. Submental nodes drain lymphatics from the chin.

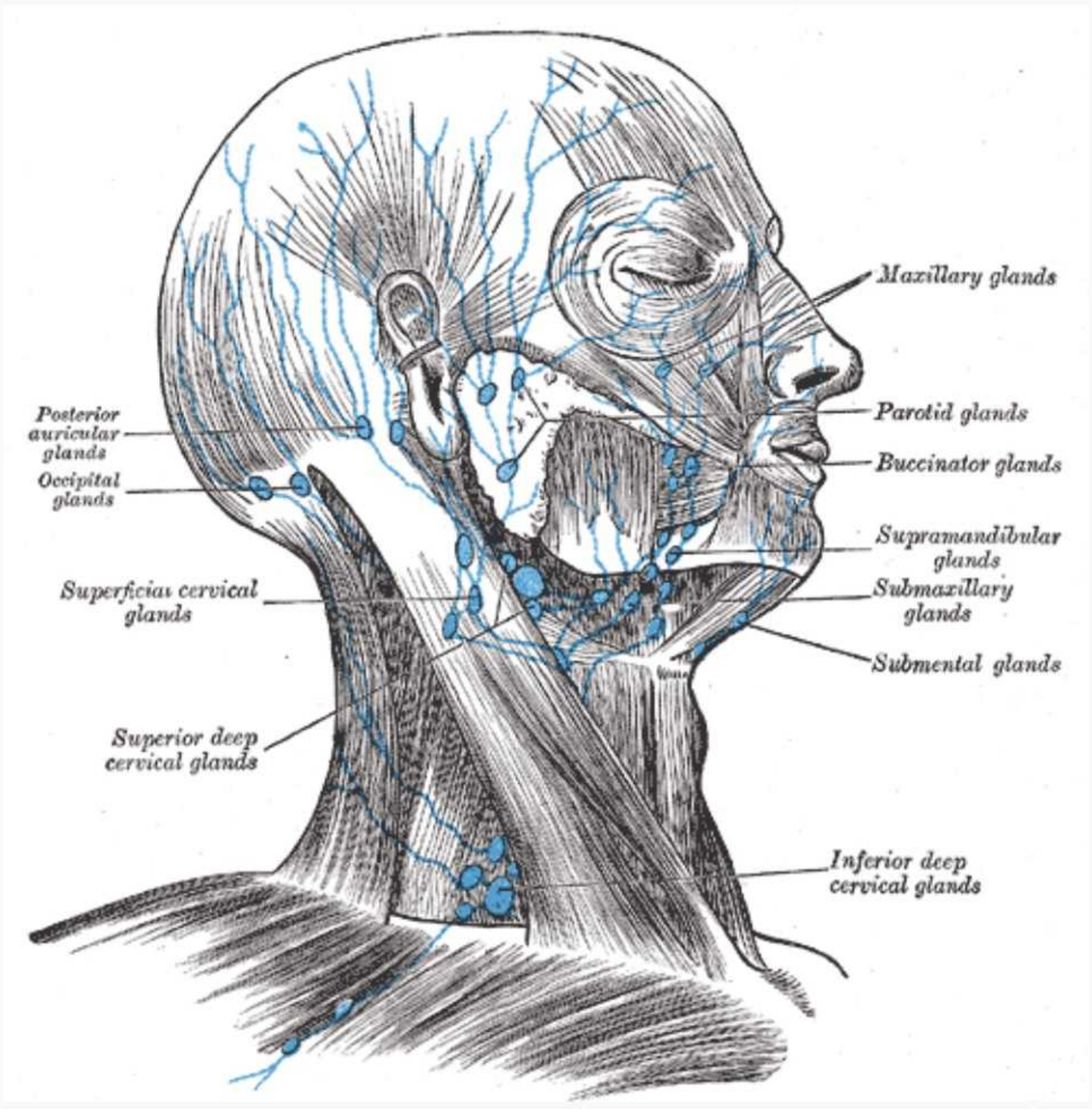
Notes

Lymphatic drainage of the face primarily moves towards three groups of lymph nodes.

Submental nodes, inferior and posterior to the chin, drain lymphatics from the medial part of the lower lip and chin bilaterally.

Submandibular nodes, superficial to the submandibular gland and inferior to the body of the mandible, drain lymphatics from the medial corner of the orbit, most of the external nose, the medial part of the cheek, the upper lip and the lateral part of the lower lip.

The preauricular and parotid nodes, anterior to the ear, drain lymphatics from most of the eyelids, a part of the external nose and the lateral part of the cheek.



By Henry Vandyke Carter [Public domain], via Wikimedia Commons

< Previous | Next >

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 113 of 115

The occipitofrontalis muscle is innervated by which of the following nerves:

a Oculomotor nerve

b Spinal nerves C2 – C3

c Facial nerve

d Spinal nerve C1

e Ophthalmic division of trigeminal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 113 of 115

The occipitofrontalis muscle is innervated by which of the following nerves:

a) Oculomotor nerve ✗
b) Spinal nerves C2 – C3
c) Facial nerve ✓
d) Spinal nerve C1
e) Ophthalmic division of trigeminal nerve

Answer

The occipitofrontalis muscle is innervated by the facial nerve.

Notes

The facial muscles act as muscles of facial expression, and as sphincters and dilators of the orifices of the face.

The facial muscles are all innervated by the facial nerve (CN VII).

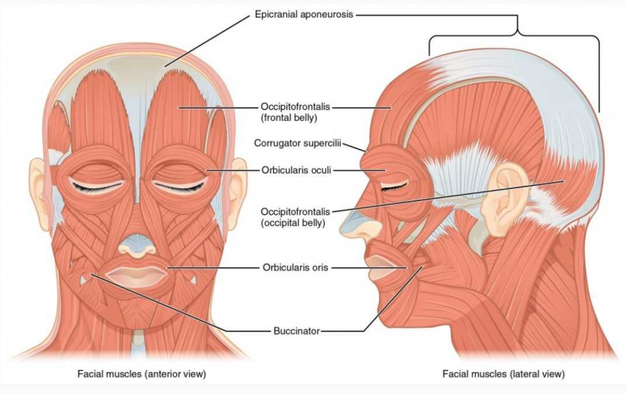
Muscle	Action
Orbicularis oculi	Closes eyelids gentle and forcefully
Occipitofrontalis	Raises eyebrows and wrinkles forehead
Orbicularis oris	Closes lips and protrudes lips as in whistling
Buccinator	Presses cheek against teeth, aids in forceful expulsion of air from distended cheeks

The orbicularis oculi is a large muscle located over the frontal and zygomatic bones and is responsible for closure of the eyelids, both gently (palpebral part) and forcefully as in screwing the eyes up (orbital part).

The occipitofrontalis is responsible for wrinkling the forehead, raising the eyebrows and drawing the scalp backwards. It has two bellies, the occipital belly originating from the superior nuchal line of the occipital bone and mastoid process of the temporal bone, and the frontal belly originating from the skin of the eyebrows; both heads insert onto the epicranial aponeurosis.

The orbicularis oris is a complex muscle consisting of fibres that completely encircle the mouth, responsible for closing the lips and protruding the lips (as in whistling).

The buccinator originates from the posterior parts of the maxilla and mandible, deep to the other facial muscles. Its muscle fibres run forwards to blend with those of the orbicularis oris muscle and to insert into the modiolus, which is a small button-shaped nodule of connective tissue at the interface between the muscles of the lips and cheeks on each side. The buccinator is responsible for pressing the cheek against the teeth which helps keeps the cheek taut and aids in mastication by preventing food from accumulating between the teeth and cheek. The muscle also assists in the forceful expulsion of air from the cheeks by compressing the distended cheeks.



By OpenStax [CC BY 4.0], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head



Question 114 of 115

A 45 year old man, who has previously sustained significant head trauma, presents to ED complaining of numbness over the tip of his nose. Which of the following nerves is most likely affected:

a Facial nerve

b Chorda tympani nerve

c Ophthalmic division of trigeminal nerve

d Mandibular division of trigeminal nerve

e Maxillary division of trigeminal nerve

< Previous | Next > | See Answer

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 114 of 115

A 45 year old man, who has previously sustained significant head trauma, presents to ED complaining of numbness over the tip of his nose. Which of the following nerves is most likely affected:

a) Facial nerve ✗
b) Chorda tympani nerve
c) Ophthalmic division of trigeminal nerve ✓
d) Mandibular division of trigeminal nerve
e) Maxillary division of trigeminal nerve

Answer

The external nose is innervated by:

- the infratrochlear nerve (ophthalmic nerve) supplying the bridge of the nose
- the external nasal nerve (ophthalmic nerve) supplying the lower anterior nose
- the infraorbital nerve (maxillary nerve) supplying the sides of the lower nose.

Notes

The trigeminal nerve divides into three major divisions: the ophthalmic (V1), maxillary (V2) and mandibular (V3) nerves which supply the skin of the face.

The ophthalmic nerve exits the skull through the superior orbital fissure to enter the orbit. It gives rise to five cutaneous branches that supply the face:

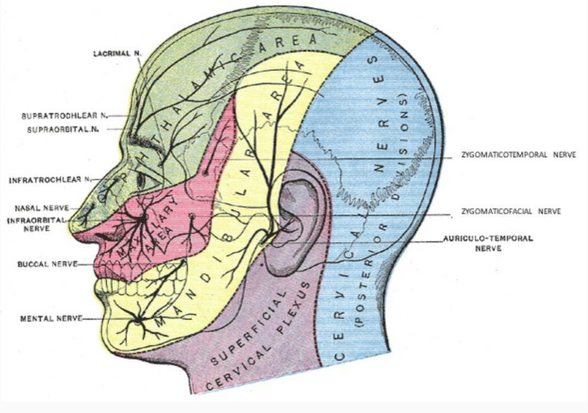
- the supraorbital nerve (innervating skin of the upper eyelid and conjunctiva and the skin of the upper forehead extending back to the middle of the scalp)
- the supratrochlear nerve (innervating skin of the lower central part of the forehead and conjunctiva and skin of the upper eyelid)
- the infratrochlear nerve (innervating the medial half of the upper eyelid, the skin in the area of the medial angle and the side of the nose)
- the lacrimal nerve (innervating the lateral half of the upper eyelid and the skin in the area of the lateral angle)
- the external nasal nerve (innervating the anterior part of the nose).

The maxillary nerve exits the skull through the foramen rotundum and gives rise to three cutaneous branches that supply the face:

- the zygomaticotemporal nerve (innervating a small area of the anterior temple above the zygomatic arch)
- the zygomaticofacial nerve (innervating a small area of skin over the zygomatic bone)
- the infraorbital nerve (innervating the lower eyelid, the cheek, the side of the nose and the upper lip).

The mandibular nerve exits the skull through the foramen ovale and gives rise to three cutaneous branches that supply the face:

- the auriculotemporal nerve (innervating the external acoustic meatus, the surface of the tympanic membrane and a large area of the temple)
- the buccal nerve (innervating the cheek)
- the mental nerve (innervating the skin and mucous membranes of the lower lip and the skin of the chin).



By Patrick J. Lynch, medical illustrator (Patrick J. Lynch, medical illustrator) [CC BY 2.5], via Wikimedia Commons

< Previous | Next > | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 115 of 115



Sensation from the posterior one-third of the tongue is carried by which of the following nerves:

a Facial nerve

b Chorda tympani

c Glossopharyngeal nerve

d Hypoglossal nerve

e Lingual nerve

< Previous | See Answer | Submit

Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design

Anatomy: Head

Question 115 of 115

Sensation from the posterior one-third of the tongue is carried by which of the following nerves:

a) Facial nerve ✖
b) Chorda tympani
c) Glossopharyngeal nerve ✔
d) Hypoglossal nerve
e) Lingual nerve

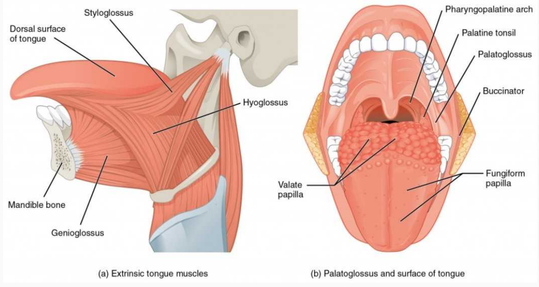
Answer

Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.

Notes

The tongue is a muscular structure that forms part of the floor of the oral cavity and part of the anterior wall of the oropharynx. The anterior two-thirds of the tongue are in the oral cavity. The posterior root of the tongue is attached to the mandible and the hyoid bone. The anterior wall of the oropharynx inferior to the oropharyngeal isthmus is formed by the upper part of the posterior one-third of the tongue.

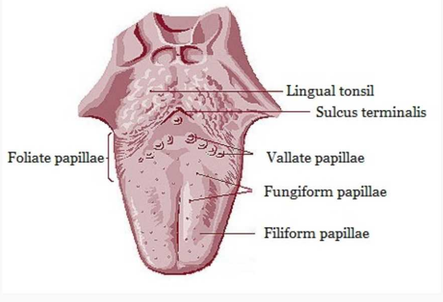
A pair of mucosal pouches (valleculae), one on each side of the midline, between the base of the tongue and epiglottis, are depressions formed between the midline mucosal fold and two lateral folds that connect the tongue to the epiglottis.



By OpenStax [CC BY 4.0], via Wikimedia Commons

Papillae and lingual tonsil

The oral (anterior two-thirds) and pharyngeal (posterior one-third) surfaces are separated by a V-shaped terminal sulcus of the tongue. The superior surface of the oral part of the tongue is covered by papillae, the majority of which have tastebuds on their surface. The mucosa of the pharyngeal surface of the tongue is irregular, because of the many small nodules of lymphoid tissue in the submucosa, collectively known as the lingual tonsil.



By Lesion (Own work) [CC BY-SA 3.0], via Wikimedia Commons

Nerve supply

- Sensation from the anterior two-thirds of the tongue is carried by the lingual nerve, branch of the mandibular nerve.
- Taste from the anterior two-thirds of the tongue is carried by the chorda tympani, branch of the facial nerve.
- Taste and sensation from the posterior one-third of the tongue is carried by the glossopharyngeal nerve.
- All muscles of the tongue are innervated by the hypoglossal nerve, except for the palatoglossus, which is innervated by the vagus nerve.

Lymphatics

All lymphatics from the tongue ultimately drain into the deep cervical chain of nodes along the internal jugular vein. The pharyngeal part of the tongue drains through the pharyngeal wall directly into mainly the jugulo-omohyoid node of the deep cervical chain. The oral part of the tongue drains both directly into the deep cervical nodes and indirectly into these nodes by passing first through the mylohyoid muscle and into submental and submandibular nodes.

< Previous | Submit | Something wrong?

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Clear Exam

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design